Chapter 3
EXISTING ENVIRONMENT

OVERVIEW

Natural landmarks are the geographic features that have played an important role in guiding travelers and traders who lived and worked along the trail. The Río Grande Valley is the predominant natural feature associated with El Camino Real in Texas and New Mexico. The Río Grande Valley is defined by imposing mountain ranges. Among the most prominent are the Franklin, Organ, San Andres, Caballo, San Mateo, Magdalena, Ladron, Manzano, Sandia, Ortiz, Jemez, and Sangre de Cristo mountains.

In addition to the mountains along the Río Grande Valley, there are several other interesting physiographic features along El Camino Real: Jornada del Muerto, Tomé Hill, Mesa Contadero, Fray Cristóbal, and the Santa Fe River Canyon. Jornada del Muerto, stretching for almost 80 miles, is a segment of El Camino Real. It is framed by the San Andres Mountains to the east and the Caballo Mountains to the west. The mountains frame a mostly undeveloped landscape—an excellent example of the Chihuahuan desert landscape that contains abundant evidence of its use throughout the period of significance. It retains a substantial amount of integrity in some stretches, which are evocative of the scenery travelers experienced centuries ago. The most significant intrusions on the landscape are periodic glimpses of an interstate highway. Noise and the visual intrusion from the highway and the Santa Fe Railway railroad tracks disrupt the solitude and the feeling that the sweeping views produce. The present lack of shelter and water highlight the remoteness of the area and recall the anxiety that many travelers experienced when they were getting ready to cross Jornada del Muerto.

Along this stretch of the trail, shallow ruts are often visible amidst the typical Chihuahuan desert vegetation: mesquite, yucca, creosote bush, four- wing saltbush, and snakeweed. Basins with no outlet drain into shallow playas. Dust devils hover over these playas during the hot summer months. Sand dunes are common. In a few locations are small beds and isolated buttes of black lava. After the July–October torrential summer rains, the sparse brown and ocher vegetation experiences a dramatic change, when yellow, pink, red, and white flowers in full bloom appear almost overnight, and bright green grasses invade the normally bare soil. The usually dry arroyos fill with rainwater run- off. In some areas of Jornada del Muerto, reddish soils highlight the greenness of the desert vegetation and the darkness of the lava outcroppings.

Tomé Hill *(Cerro de Tom)* is in a transition zone between the Chihuahuan desert and the New Mexico plateau. This distinctive site, 5 miles north of Belen, rises about 350 feet from the valley floor. The vegetation includes mostly four-wing saltbush and scattered mesquite, as well as desert shrubs. It is much sparser than in the southern stretches of the Chihuahuan desert; in many areas, it is found principally along the road. The gray- brownish sandy soils that predominate in this landscape highlight even more the greenness of the lush vegetation that grows along the *acequias* (irrigation ditches) and the Río Grande.

The original route of El Camino Real followed by Oñate in 1598 passed around the east base of the hill, which subsequently became a significant landmark for travelers on the road. For North American Indians, the hill itself is a sacred feature, as evidenced by petroglyphs. The hill has since become a Catholic shrine, and remains a pilgrimage site, with several crosses on its crest. Petroglyphs in this area are similar to those found elsewhere along the Río Grande. Scattered adobe ruins and an occasional old homestead lend a picturesque character to the area.

The Santa Fe River Canyon segment (formerly called *Ca on de las Bocas*), a stretch of El Camino Real along the Santa Fe River near the state capital of New Mexico, possesses highly attractive visual qualities. This area, mostly in public ownership, crosses a region that typifies the New Mexico plateau. The most salient features of this landscape are the tablelands, having moderate to sizable relief. The area also contains large basalt blocks that were cleared from a bench surface and placed in two parallel lines adjacent to the road. The canyon is fairly narrow and not particularly deep. Along the stream that flows year- round are a few sizable cottonwoods and the riparian vegetation typically found in permanent streams in this ecoregion. Grasses seldom cover the ground completely; many areas remain bare. Sagebrush, rabbit brush, four- wing saltbush, snakeweed, cholla, and prickly pear are prevalent in the flats and in disturbed areas. The ground is blanketed with blooming flowers during the rainy summer season. One species of juniper covers the north- facing hillsides.

There are pueblo ruins here, too—near the southern end of the canyon. The most impressive feature of the site is the steepness of the canyon, which early trail users had to negotiate. The imposing entrance to the canyon can be seen from miles away to the south.

LANDOWNERSHIP/LAND USE

The route from San Juan Pueblo, New Mexico, to El Paso, Texas, is approximately 404 miles long, although the mileage of trail including the duplicate routes includes over 654 miles. About 55% of this route is privately owned; the rest is divided among federal and state land managing agencies and North American Indian lands or reservations. Ownership of land through which the trail passes (in New Mexico and Texas) is detailed in **Table 1** below.

Table 1: Landownership

Ownership/Management	Total Mileage (% of total)	Total Mileage, Including Duplicate Routes % of total)*
Private	222 (55)	376.7 (57)
State	24 (6)	24.7 (4)
Federal/BLM	57 (14)	59.7 (9)
Federal / USDA Forest Service	11 (3)	9.2 (2)
Federal/USFWS	28 (7)	90.1 (14)
North American Indian Reservation	62 (15)	89.5 (14)
U.S. Army Corps of Engineers	—	4.6 (1)
Total	404	654.5

Segments of the trail pass through or near to the cities of Santa Fe, Albuquerque, Socorro, Las Cruces, and El Paso. The trail also passes through the North American Indian communities of San Juan, Santa Clara, San Ildefonso, Cochiti, Santo Domingo, San Felipe, Santa Ana, Sandia, Isleta, and Ysleta del Sur. The urban areas total approximately 14% (58 miles) of the total length of the trail from San Juan Pueblo to El Paso (see **Table 2** below). Approximately 16% (60 miles) of this distance is in rural development and/or farm areas. Most of the trail (about 77%) is in a less developed condition, with most of this land being in private ownership.

Table 2: Land Uses

Land Use/Cover	Total Mileage	% of Trail
Urban Areas	65	16
Agriculture	45	12
Rangeland	212	52
Forestland	69	17
Water/Wetlands	13	3
Total	404	100

Table 3 illustrates the mileage of trail by federal administrative jurisdiction and the mileage of trail meeting the high- potential route segment definition:

Table 3: Trail Mileage on Federal Components*

Administrative Jurisdiction	Mileage w/Route Variants	Mileage of High-potential Routes
BLM – Las Cruces Field Office	28.6	9.3
BLM – Socorro Field Office	14.2	0.0
BLM – Taos Field Office	16.9	0.3
USFS – Santa Fe National Forest	7.7	4.6
USFWS – Sevilleta NWR	33.3	0.0
USFWS – Bosque del Apache NWR	56.8	4.8
U.S. Army Corps of Engineers	4.6	0.8
Total	163.6	19.8

*GIS calculations based upon data collected at the 1:24,000 scale

HUMAN USES AND VALUES

The proposed project could potentially affect eight counties in New Mexico, one county in Texas, and the Mexican State of Chihuahua. These counties and the Mexican state comprise an economic study area (ESA), and form the basis for the socioeconomic profile for the area of the proposed project. The socioeconomic setting for each U.S. county and the Mexican state is described below in north- to- south order.

The following section summarizes the socioeconomic conditions in the study area for the latest available year that data are available. In most cases, the data are for the year 2000. In certain cases as noted, 1999, 1997, and 1990 data are used as the most recent available sources.

Río Arriba County, New Mexico

The county seat of Río Arriba County is Tierra Amarilla. Río Arriba County's year 2000 population was 41,190, which represents an overall increase of 64.8% from the 1950 population of 24,997, or an annual average growth rate of 1.3%. Most of this growth took place during the period 1970- 2000, when population grew from 25,308 to its current level. Of the 2000 population, a total of 30,025, or 72.9%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources such as investments and transfer payments including age-related sources (retirement, disability, insurance, and Medicare) and welfare. Non- Labor income rose from $73 million in 1970 to $244 million in 2000, an increase of 234%. The second fastest growing component of personal income was Services and Professional. Average earnings per job, in real terms, dropped from $23,500 in 1970 to $19,140 in 1999. Persons below the poverty level were 22.5% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 7,946 new jobs were created, with Services and Professional accounting for 5,529 of the new jobs and Government accounting for 1,155 new jobs. These sectors are the largest and second largest employers, respectively. Construction is the third largest employment sector. The unemployment rate in 1970 was 13.5%, dropping to 6.9% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 6.0% of the total population, and high school graduates were 38.3% of the total population.

The county had 18,016 housing units in 2000, with an occupancy rate of 83.5%. The rental vacancy rate was 8.0%, and the home ownership rate was 81.6%. Median gross rent (1990 data) was $285.

Santa Fe County, New Mexico

The county seat of Santa Fe County is Santa Fe, which is also the state capitol. Santa Fe County's 2000 population was 129,292, which represents an overall increase of 238.9% from the 1950 population of 38,153, or an annual average growth rate of 4.8%. Most of this growth took place during the period 1970- 2000, when population grew from 55,026 to its current level. Of the 2000 population, a total of 65,887, or 49.0%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $238 million in 1970 to $1,333 million in 2000, an increase of 460%. The second fastest growing component of personal income was Services and Professional. The growth curves for Non- Labor and Services and Professional sectors are almost identical. Growth in the Government, Manufacturing, Construction, Mining, and Farm and Agricultural Services sectors was much smaller. Average earnings per job, in real terms, rose from $25,535 in 1970 to $26,471 in 1999. Persons below the poverty level were 11.9% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 58,718 new jobs were created, with Services and Professional accounting for 42,545 of the new jobs and Government accounting for 8,059 new jobs. These sectors are the largest and second largest employers, respectively. Construction is the third largest employment sector. The unemployment rate in 1970 was 3.3%, dropping to 2.7% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 21.2% of the total population, and high school graduates were 54.3% of the total population.

The county had 57,701 housing units in 2000, with an occupancy rate of 91.0%. The rental vacancy rate was 5.6%, and the home ownership rate was 68.6%. Median gross rent (1990 data) was $489.

Sandoval County, New Mexico

The county seat of Sandoval County is Bernalillo. Sandoval County's 2000 population was 89,908, which represents an overall increase of 622.8% from the 1950 population of 12,438, or an annual average growth rate of 12.5%. Most of this growth took place during the period 1970-2000, when population grew from 17,703 to its current level. Of the 2000 population, a total of 26,437, or 29.4%, were Hispanic or Latino.

From 1970 to 1999 net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $47 million in 1970 to $540 million in 2000, an increase of 1,049%. The second fastest growing component of personal income was Government. Average earnings per job, in real terms, rose from $25,080 in 1970 to $28,639 in 1999. Persons below the poverty level were 12.9% of the population, based on the latest available 1997 estimates.

From 1970 to 1999 a total of 28,035 new jobs were created, with Government accounting for 3,042 of the new jobs and Construction accounting for 1,638 new jobs. Services and Professional, and Manufacturing, are the largest and second largest employers, respectively. Government is the third largest employment sector. The unemployment rate in 1970 was 5.5%, dropping to 3.3% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 11.6% of the total population, and high school graduates were 48.1% of the total population.

The county had 34,866 housing units in 2000, with an occupancy rate of 90.1%. The rental vacancy rate was 11.4%, and the home ownership rate was 83.6%. Median gross rent (1990 data) was $468.

Bernalillo County, New Mexico

The county seat of Bernalillo County is Albuquerque. Bernalillo County's 2000 population was 556,678, which represents an overall increase of 282.1% from the 1950 population of 145,673, or an annual average growth rate of 5.6%. The growth curve was fairly even over this entire period. Of the 2000 population, a total of 233,565, or 42.0%, were Hispanic or Latino.

From 1970 to 1999 net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Services and Professional income rose from $2,330 million in 1970 to $7,282 million in 2000, an increase of 213%. The second fastest growing component of personal income was Non- Labor sources. Average 1999 earnings per job, in real terms, were $29,675, changing very little between 1970 and 1999. Persons below the poverty level were 14.6% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 248,880 new jobs were created, with Services and Professional accounting for 188,912 of the new jobs and Government accounting for 28,779 new jobs. Services and Professional, and Government, are the largest and second largest employers, respectively. Manufacturing is the third largest employment sector. The unemployment rate in 1970 was 5.4%, dropping to 3.2% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college

graduates totaled 17% of the total population, and high school graduates were 52.3% of the total population.

The county had 239,074 housing units in 2000, with an occupancy rate of 92.4%. The rental vacancy rate was 11.5%, and the home ownership rate was 63.7%. Median gross rent (1990 data) was $402.

Valencia County, New Mexico

The county seat of Valencia County is Los Lunas. Valencia County's 2000 population was 66,152, which represents an overall increase of 194.2% from the 1950 population of 22,481, or an annual average growth rate of 3.9%. Growth during the period 1970- 2000, when population grew from 40,821 to its current level, was irregular, with the population declining steeply (about 50%) between 1980 and 1982, and then rebounding over the next 18 years. Of the 2000 population, a total of 36,371, or 55.0%, were Hispanic or Latino.

From 1970 to 1999 net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $81 million in 1970 to $359 million in 2000, an increase of 343%. The second fastest growing component of personal income was Government. Average earnings per job, in real terms, declined from $25,037 in 1970 to $220,643 in 1999. Persons below the poverty level were 18.3% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 9,479 new jobs were created, with Services and Professional accounting for 5,677 of the new jobs and Government accounting for 2,224 new jobs. Services and Professional, and Government, are the largest and second largest employers, respectively. Mining is the third largest employment sector. The unemployment rate in 1970 was 6.3%, dropping to 4.0% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 7.4% of the total population, and high school graduates were 44.9% of the total population.

The county had 24,643 housing units in 2000, with an occupancy rate of 92.0%. The rental vacancy rate was 11.8%, and the home ownership rate was 83.9%. Median gross rent (1990 data) was $344.

Socorro County, New Mexico

The county seat of Socorro County is Socorro. Socorro County's 2000 population was 18,078, which represents an overall increase of 86.9% from the 1950 population of 9,670, or an annual average growth rate of 1.7%. Most of this growth took place during the period 1970- 2000, when population grew from 9,775 to its current level. Of the 2000 population, a total of 8,810, or 48.7%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $29 million in 1970 to $107 million in 2000, an increase of 269%. The second fastest growing component of personal income was Government. Average earnings per job, in real terms, dropped from $23,182 in 1970 to $21,398 in 1999. Persons below the poverty level were 31.4% of the population, based on the latest available 1997 estimates.

From 1970 to 1999 a total of 3,759 new jobs were created, with Government accounting for 1,110 of the new jobs and Construction accounting for 102 new jobs. Government, and Services and Professional, are the largest and second largest employers, respectively. Farm and Agricultural Services is the third largest employment sector. The unemployment rate in 1970 was 7.4%, dropping to 5.5% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 10.0% of the total population, and high school graduates were 39.2% of the total population.

The county had 7,808 housing units in 2000, with an occupancy rate of 85.5%. The rental vacancy rate was 11.8%, and the home ownership rate was 71.1%. Median gross rent (1990 data) was $305.

Sierra County, New Mexico

The county seat of Sierra County is Truth or Consequences. Sierra County's 2000 population was 13,270, which represents an overall increase of 84.7% from the 1950 population of 7,186, or an annual average growth rate of 1.7%. Most of this growth took place during the period 1970- 2000 when population grew from 7,215 to its current level. Of the 2000 population, a total of 3,488, or 26.3%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $36 million in 1970 to $128 million in 2000, an increase of 256%. The second fastest growing component of personal income was Government. Average earnings per job, in real terms, dropped from $21,400 in 1970 to $19,859 in 1999. Persons below the poverty level were 23.4% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 2,191 new jobs were created, with Government accounting for 1,323 of the new jobs and Construction accounting for 127 new jobs. Services and Professional, and Government, are the largest and second largest employers, respectively. Farm and Agricultural Services is the third largest employment sector. The unemployment rate in 1970 was 4.2%, dropping to 2.9% by 2000. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 6.4% of the total population, and high school graduates were 48.1% of the total population.

The county had 8,727 housing units in 2000, with an occupancy rate of 70.0%. The rental vacancy rate was 17.4%, and the home ownership rate was 74.9%. Median gross rent (1990 data) was $226.

Doña Ana County, New Mexico

The county seat of Doña Ana County is Las Cruces. Doña Ana County's 2000 population was 174,682, which represents an overall increase of 341.6% from the 1950 population of 39,557, or an annual average growth rate of 6.8%. Most of this growth took place during the period 1970- 2000, when population grew from 70,254 to its current level. Of the 2000 population, a total of 110,665, or 63.4%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $172 million in 1970 to $1,068 million in 2000, an increase of 521%. The second fastest growing component of personal income was Services and Professional. Average earnings per job, in real terms, dropped from $28,313 in 1970 to $24,889 in 1999. Persons below the poverty level were 26.6% of the population, based on the latest available 1997 estimates.

From 1970 to 1999, a total of 46,300 new jobs were created, with Services and Professional accounting for 29,717 of the new jobs and Government accounting for 8,413 new jobs. Services and Professional, and Government, are the largest and second largest employers, respectively. Farm and Agricultural is the third largest employment sector. The unemployment rate in 1970 was 7.8%, dropping to 6.5% by 1999. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 12.2% of the total population, and high school graduates were 39.2% of the total population.

The county had 65,210 housing units in 2000, with an occupancy rate of 91.3%. The rental vacancy rate was 10.3%, and the home ownership rate was 67.5%. Median gross rent (1990 data) was $347.

El Paso County, Texas

The county seat of El Paso County is El Paso. El Paso County's 2000 population was 679,622, which represents an overall increase of 248.6% from the 1950 population of 194,968, or an annual average growth rate of 5.0%. Most of this growth took place during the period 1970- 2000, when population grew from 359,291 to its current level. Of the 2000 population, a total of 531,654, or 78.2%, were Hispanic or Latino.

From 1970 to 1999, net income grew, with the fastest component of personal income, in real terms, being Non- Labor sources. Non- Labor income rose from $855 million in 1970 to $4,062 million in 2000, an increase of 465%. The second fastest growing component of personal income was Services and Professional. Total earnings of persons employed in El Paso increased from $5.212 million in 1989 to $8.893 million in 1999, a growth rate of 5.5%. Per capita income in 1999 was $17,216 million, ranking El Paso County 212th in the State of Texas. By comparison, per capita income in 1989 was $11,687, which ranked it 203rd in the state. Persons below the poverty level were 27.8% of the population, based on the latest available 1997 estimates. Government, and Services and Professional, are the largest and second largest employers, respectively. Manufacturing is the third largest employment sector. The unemployment rate in 1990 was 11.6%, dropping to 9.4% by 1999. Of the total 1990 population (latest available data), persons 25 years of age or over who were college graduates totaled 8.4% of the total population, and high school graduates were 35.3% of the total population.

The county had 224,447 housing units in 2000, with an occupancy rate of 93.6%. The rental vacancy rate was 7.8%, and the home ownership rate was 67.5%. Median gross rent (1990 data) was $347.

North American Indian Reservations

Table 4 summarizes information on the North American Indian reservations located wholly or partially within the ESA.

Table 4: Socioeconomic Data Summary
North American Indian Reservations*

Pueblo	County (ESA area)	Trust Acreage	Reservation Population	Principal Revenue Source
Acoma	Socorro, NM	364,439	4.616	Tourism, gaming, wood products, farming, ranching
Cochiti	Sandoval, Santa Fe, NM	50,681	1,189	ACOE lease, fishing permits, other leases
Isleta	Bernalillo, NM	211,037	4,296	Recreation, Forest products, gaming
Jemez	Sandoval, NM	89,618	2,996	Forest products, farming, recreation
San Felipe	Sandoval, NM	48,859	3,131	Farming and ranching, crafts, gaming
Sandia	Sandoval, NM	22,876	471	Gaming, farming, leases and permits
Santa Ana	Sandoval, NM	61,379	698	Leasing, farming and ranching, crafts, gaming
Santo Domingo	Sandoval, Santa Fe, NM	69,401	4,324	Farming and ranching, crafts, gaming, permits, crafts
Ysleta	El Paso, TX	188	804	crafts, leasing, gaming
Zia	Sandoval, NM	119,538	900	Farming and ranching, leasing

*Socioeconomic data for the other American Indian Reservations within the ESA was not available.

State of Chihuahua, Mexico

The Mexican State of Chihuahua lies immediately to the south of New Mexico and Texas. The socioeconomic conditions in Chihuahua are briefly described in this document because Chihuahua may be affected most directly from the proposed project and from related National Park Service management programs. El Camino Real de Tierra Adentro extends through the other Mexican states of Durango, Zacatecas, Aguascalientes, San Luis Potosí, Guanajuato, Querétaro, and Mexico, D.F., as well, but detailed socioeconomic data are not provided, because impacts for these areas are less well defined than for the border states. The effects of other ongoing efforts (such as Sister Cities, Habitat Chat, and cultural tourism workshops) are described in the Environmental Consequences and Mitigation section of this report.

Chihuahua receives approximately 9.4 inches of rainfall per year. The current (year 2000) population of Chihuahua is estimated to be 3,047,867 individuals (XII Censo General De Poblacion Y Vivienda, Resultados Preliminares). This represents an increase of 606,000 persons compared to 1990 (a 25% increase). Also between 1990 and 2000, the population of Mexico grew by about 20%. The population of Chihuahua is evenly split between males and females. In 1998, there were 79,336 births and 15,753 deaths in the state. **Table 5** shows selected statistics for Chihuahua and the largest several towns or cities within the state.

Table 5: Comparison of Selected Economic Indicators - State of Chihuahua

State or City	Population2000 (a)	Total Employment 1998 (b)	Individuals per House 2000 (a)	Number of Business 1998 (b)
State of Chihuahua	3,047,867	744,450	4.0	88,803
Ciudad Juárez	1,217,818	393,867	4.1	32,068
Chihuahua	670,208	194,783	3.9	23,276
Cuauhtemoc	124,279	22,327	3.9	4,465
Delicias	116,132	29,778	3.9	5,219
Hidalgo	100,881	21,902	4.1	4,928
Nueva Casas Grandes	54,226	13,100	3.9	2,300
Guadalupe	48,226	630	5.3	122

Sources:
(a) Preliminary data are for year 2000 (XII Censo General De Poblacion Y Vivienda, Resultados Preliminares).
(b) Data are for 1998 (Aspectos Economicas de Chihuahua).

Summary of ESA Growth Characteristics

Figure 1 below summarizes the population growth in United States counties from 1950 to 2000. It can be seen from the table that overall growth curve in the U.S. jurisdictions has been fairly steady over the past 50 years. This growth pattern can be expected to continue in the future.

Table 6 below provides additional details on county- by- county growth, along with their respective rates of increase.

For comparative purposes, the Mexican State of Chihuahua is also included.

Figure 1
Population Growth, U.S. Counties 1950-2000

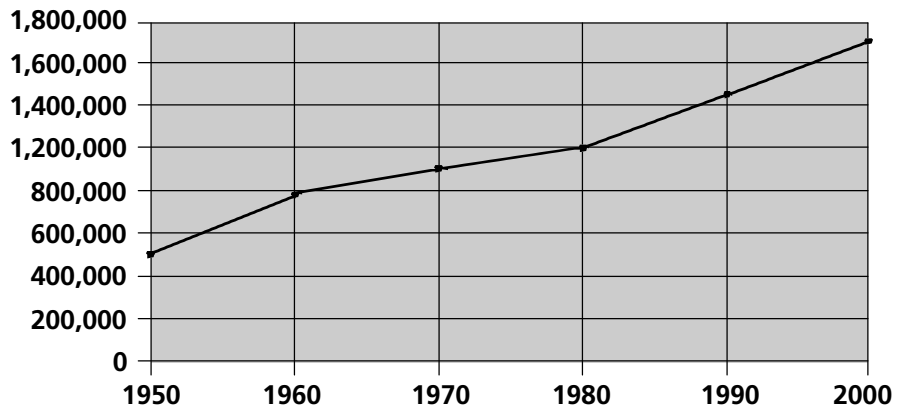


Table 6: Comparison of Population Growth in El Camino Real de Tierra Adentro NHT ESA

County	1950	1960	1970	1980	1990	2000	Rate
Río Arriba	24,997	24,193	25,170	29,282	34,365	41,190	64.8%
Santa Fe	38,153	44,970	53,756	75,360	98,928	129,292	238.9%
Sandoval	12,438	14,201	17,492	34,799	63,319	89,908	622.8%
Bernalillo	145,673	262,199	315,774	419,700	480,577	556,678	282.1%
Valencia	22,481	39,085	40,539	61,115	45,235	66,152	194.2%
Socorro	9,670	10,168	9,763	12,566	14,764	18,078	86.9%
Sierra	7,186	6,409	7,189	8,454	9,912	13,270	84.7%
Dona Ana	39,557	59,948	69,773	96,340	135,510	174,682	341.6%
El Paso	194,968	314,070	479,899	479,899	591,610	679,622	248.6%
Total U.S. Counties	495,123	775,243	898,747	1,217,515	1,474,202	1,702,720	243.9%
Chihuahua	NA	NA	NA	NA	NA	3,047,867	NA
Grand Total	NA	NA	NA	NA	NA	4,750,587	NA

The data indicate that the largest amount of growth in New Mexico, both in terms of absolute numbers and percentage of increase, has occurred in the central part of the state, roughly from Santa Fe to Albuquerque. A secondary growth node has been at Doña Ana County. The more rural counties of both northern and south- central New Mexico have lagged in growth and economic development. Growth in El Paso kept pace with the total growth of the United States counties. While data are not available for a comparable period for Chihuahua, growth in the single decade 1990- 2000 was 26%, suggesting that growth over the longer period was quite rapid in the Mexican state.

RESOURCE VALUES

Cultural Environment

The cultural environment affected by the use of El Camino Real was overwhelmingly complex and staggering in its scope. Cutting through north- central Mexico up through the Río Grande Valley to an area near Santa Fe, El Camino Real brought armies of Spanish explorers, and later a flood of settlers, into contact (and often into conflict) with existing populations of distinct indigenous North American Indian tribes, bands, and sub- bands numbering in the hundreds. The resulting acculturation pressure resulted in the cultural extinction of many of these groups. The legacy of this contact and acculturation exists today in the unique mixed cultural heritage of vast areas that extend well beyond the borders of New Mexico.

This brief overview of the historic cultural environment of El Camino Real provides background material to accomplish three major objectives. First, the overview provides an outline of those indigenous North American Indian groups present on the landscape when the trail was first used by Spanish explorers and settlers. Second, a brief ethnohistoric description provides the reader with limited insight into the cultural complexity of the region impacted by the road's use. And, third, the report provides background for the tribal consultation work required of any project proposals that affect extant North American Indian tribes. The overall goal of this effort is to aid in consultation with existing tribes to determine their views regarding the affects El Camino Real has had on their history, and what impacts, if any, the present plan's proposal may have on existing ethnographic resources on or off of federal lands.

Ethnographic Resources

Cultural or historic resources, such as archeological sites or historic buildings, are determined to be significant by legislation, or by the collective judgment of a scientific or academic discipline. Ethnographic resources, on the other hand, are assigned their significance by members of the living human community associated with them. A physical resource could be a specific animal or plant species, mineral, specific man-made or natural object, place, creek, spring, river, lake, any physiological feature on the landscape, or perhaps an entire landscape. Loosely defined, an ethnographic resource is any cultural or natural resource ascribed value by an existing ethnic community. The values associated with these resources come from the community itself—not from some external entity—and are associated with the cultural or ethnic identity of the community.

The Road North—Southern End - In the 16th century Spanish oficials wasted little time in setting about the tasks of discovery, control, and economic development. Between 1527 and the 1590s, a number of official and unauthorized parties set out from the central and eastern coastal areas of "New Spain" to investigate lands, minerals, and other resources for economic purposes. There can be little doubt that these explorers, who usually employed indigenous guides, were well aware of the local North American Indian populations they encountered on their travels. Early Spanish routes throughout present- day Mexico, and to areas of the southwestern United States, were largely established by following existing Indian trails that had been used for travel and trade for centuries before the Spaniards arrived. The entire length of El Camino Real de Tierra Adentro within New

Mexico was traveled in 1598 by Don Juan de Oñate, and was a patchwork of Indian trails over mountain passes and river crossings that facilitated passage through a complex range of Indian territories and societies.

The Spanish colonial desire to provide a more direct link the promising hinterlands of the north to established provinces in "New Spain" essentially gave birth to El Camino Real. But this "new" route north from the region of Santa Barbara in Present Chihuahua passed through a host of indigenous tribal territories. However, Juan de Oñate was not the first to encounter or deal with these indigenous groups. Decades before his arrival, incursions into the area by government sanctioned military operations, mining exploration and development, and missionary work literally and figuratively paved the way for Oñate's expedition in 1598.

From the standpoint of broad tribal groupings, north of Querétaro to present Chihuahua El Camino Real cut through, from south to north, the territories of the Chichimeca- Pame- Jonaz; Guamar; Zacatic; Cuachichil; Languero; Toboso; Cacaxte; Concho; Suma- Jumano; and Jano-Jocome. The Indian peoples who inhabited this large area were typically nomadic hunters and gatherers. Some may have practiced limited horticulture to raise corn, beans, and squash. Most were organized into small bands that were tied to one another by kinship and marriage, common or related languages, or generally common cultural traditions. Most of these groups, with the exception of the large permanent villages at La Junta, lived in small, mobile camps of 20 to 50 individuals. Groups of this size are normally referred as "bands," rather than tribes. These bands may have come together for economic, social, or military purposes, but these instances were probably temporary in character. The smaller band organization was most likely the largest permanent autonomous political unit that made decisions concerning the control of people and use of resources. Band territory seems to have been well defined, and if strangers entered with proper introduction, warfare was a likely result.

Individual bands occupying adjacent areas, exploiting similar resources, and speaking similar languages formed natural clusters during specific seasons of the year. The larger tribal territories and the clustering of bands into "tribes" may to a large extent have been the result of Spanish contact and administration record- keeping, and may not reflect the social reality of band cultural identity or individual band social organization at the time.

The response of these tribes to Spanish colonial incursions into north- central Mexico was hostile raiding. Spanish attempts to control land and resources, and to exploit the labor of these small indigenous bands, led to increased military action during the 16th century. As the century progressed, traditional warfare shifted to some extent by focusing less on intertribal conflict and more on the raiding of emigrant settlements and missions. The acceptance of the horse by native groups sometimes led to a clustering of more distant bands for the purpose of carrying out raids. This warfare, or raiding, was not for purposes of conquest. The Spanish incursions into native territory brought forced labor and physical displacement of populations. The introduction of diseases to native populations had profound demographic impacts. Perhaps of equal importance, the introduction of alien domesticated livestock by Spanish settlements resulted in a shift in local plant ecology and a reduction in wildlife habitat—a plant and wildlife habitat necessary to support the traditional subsistence livelihood of indigenous groups. Raiding was a reaction to these intrusions, and an adaptive means of surviving.

This brief description of the ethnographic context of El Camino Real de Tierra Adentro may be viewed as somewhat irrelevant to a discussion of the context of the road and its impact on North American Indian populations north of the present- day United States- Mexico border. This may especially be true when one considers that in the 20th century, all of the original Indian groups in this region of Mexico—with the exception of areas that became refuges on the area's fringes, such as the Tarahumara to the west—are culturally extinct. However, the methods of Spanish colonization are consistent north and south of the border. North American Indian reactions to Spanish control in what is now the United States—although the various

tribes differed in many ways in terms of culture, language, and subsistence lifestyle—were similar to their cousin's reactions to the south.

Figure 2: Historic tribal territories of north-central México (from Griffen 1983:329).

El Camino Real should be seen as playing a significant role in the northern movement of Spanish control in "New Spain," especially regarding the impact on New Mexico as far north as Santa Fe. But it should also be noted that by 1598, the road itself was the result of important actions prior to Juan de Oñate's expedition. Oñate's own father was a wealthy silver baron who derived his wealth from the mines of Zacateca. Many profound impacts on Indian populations preceded the common use of this route. But long before Juan de Oñate traversed El Camino Real to the hinterlands, earlier 16th -century incursions into Indian territory with the introduction of the horse for transportation, the exploitation of whole Indian populations for labor, and the displacement of plant and wildlife species by Spanish administrative and religious settlements all brought profound changes to Indian culture, society, and livelihood. The web of prior colonial policies, actions, and events essentially paved the way for the southern portion of the road. The road itself might best be viewed as the historical and technological result of these prior events. For indigenous populations in the south, Don Juan de Oñate's journey north might be viewed as somewhat anticlimactic to the governmental policies and practices that preceded him.

The Road North—Northern End

Apachean Cultures: In 1598, Juan de Oñate, the son of a silver baron who had made his fortune in the mines of Zacateca, received royal authorization in 1598 to invest in the colonization of New Mexico. His attempts at colonization and his travels up El Camino Real from central Mexico brought him into contact with a number of North American Indian tribes. In northern Mexico and southern New Mexico, these tribes were part of a larger group of southern Athapaskan-speaking tribes whose territories reached from eastern Arizona through most of New Mexico, portions of southern Colorado, western Kansas, Oklahoma, and western and central Texas. Bands of these Apachean-speakers were also found in northern Mexico near the southern borders of New Mexico and Arizona, and the western border of Texas. Generally, there are seven recognized Southern Athapaskan- or Apachean-speaking tribes. These include the Chiricahua, Jicarilla, Kiowa-Apache, Lipan, Mescalero, Navajo, and Western Apache.

Anthropologists and linguists generally agree that the Athapaskan-speaking Apachean groups that populated the Southwest at the time of Spanish exploration had migrated into that area from regions in the north and east. Generally speaking, the various Apachean groups in New Mexico and Arizona were originally part of a larger movement of these peoples from the southern Great Plains to the Southwest. They were primarily hunters and gatherers who were subsisting by following the movement of the vast buffalo herds of the Great Plains area. It is difficult to determine exactly when the various Apache groups differentiated, but it has been surmised that in some cases the material cultural differences between these groups may be due to their

proximity and social interaction with the more sedentary tribes of New Mexico. For the purposes of this report, the Apachean tribes most directly impacted (due to their location) by El Camino Real were the Chiricahua and the Mescalero.

Juan de Oñate's travels north through southern New Mexico followed the Río Grande route, and he passed directly through the traditional territories of the Chiricahua and the Mescalero Apache. The Chiricahua Apache occupied lands throughout southwestern New Mexico, the southeastern corner of Arizona, and areas straddling what are today the States of Sonora and Chihuahua in Mexico. The larger tribal entity is named after the mountains in southern Arizona of the same name. Although various authors group the various bands of Chiricahua differently, there are three major named bands of the larger group. The Apache designation for the eastern band is "red- paint people" *(cih ne)*. This band occupied most of the Apache territory west of the Río Grande in New Mexico. Their immediate Apache neighbors to the east were the Mescalero. The red- paint people were divided into subgroups, or sub- bands, and were named after geographic landmarks within their respective territories. Some of these names included Mimbreños, Coppermine, Warm Springs, and Mogollon Apache.

The central band of the Chiricahua resided to the west of the red- paint people. An English equivalent is not mentioned for the Apache name for this band—*co- kan n*. The range of this band included present- day Willcox, Duncan, Elgin, and Benson, Arizona, and included the Chiricahua, Dragoon, Mule, and Huachuca mountains.

The southernmost band of the Chiricahua occupied the region just south of the United States- Mexico border (eastern Arizona and western New Mexico). In their own language they refer to themselves as "enemy people" *(ⁿd 'Iⁿda-)*, with the implication that they were feared by their enemies. Sharing this southern region were tribes referred to in the historic literature as the Jocome and the Jano. Various Spanish records make reference to these latter tribes as Apache, and there is disagreement over the exact identity of these groups. It is suggested that these groups were distinct bands of the Chiricahua, but were nonetheless Apache, while other argue that they were not Apache.

The Mescalero Apache occupied a region directly east of the eastern band of the Chiricahua—the Río Grande forming the boundary between the two Apachean tribes. The lands of the Mescalero were fairly extensive, and while they considered the area of eastern New Mexico and northern Mexico their core territory, they also ventured farther east for selected commodities—particularly buffalo. They were also known to travel farther north for short periods to trade.

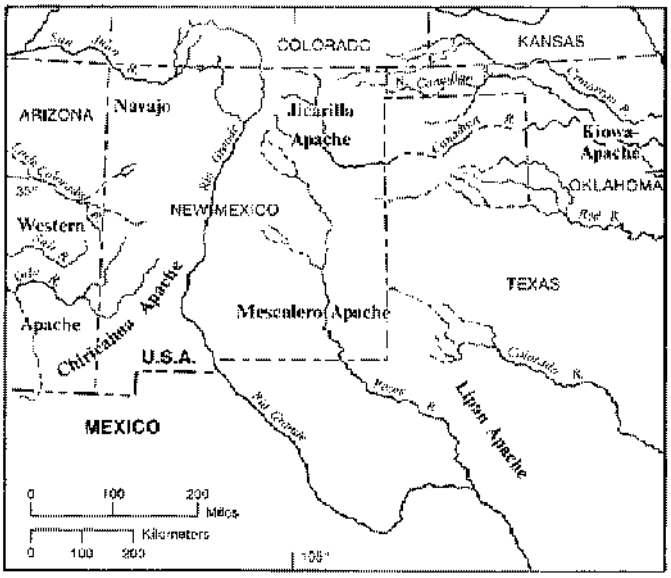


Figure 3: Apachean- speaking tribal locations (from Young 1983:394).

The third Apachean group considered here is the Jicarilla Apache Tribe. The Jicarilla occupied much of the area of New Mexico north of Santa Fe, as well as a portion of southern Colorado. As is the case with other tribal "home" territories, especially those relying on a hunting and gathering economy, traditional lands were also used by other tribes who shared a similar lifestyle. In historic times, the traditional lands of the Jicarilla described here were also used by various bands of Utes, as well as by other tribes who passed through the

area. Increasing pressures from non-Indian settlers from the east and the movement of tribal groups from the Rocky Mountain area brought incursions of additional tribal groups into the area, such as the Comanche.

The Jicarilla practiced a mixed economy, but still relied primarily on hunting and gathering. With the tribal homeland in close proximity to the Great Plains, the Jicarilla hunted the buffalo and were in contact with other Great Plains tribes who passed through the mountain passes to trade and hunt. Agriculture complemented the Jicarilla hunting practices, and when the Spanish arrived in the area, the Jicarilla were described as living in flat-roofed houses or

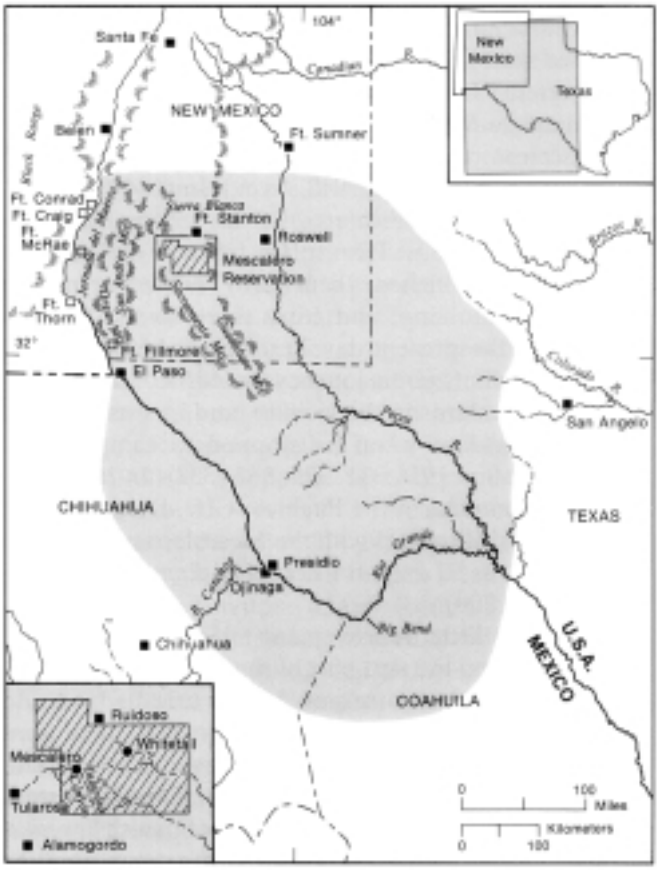


Figure 4: Mescalero tribal territory about 1830 (after Opler 1983:419).

rancherías.
Since all the Athapaskan-speaking Apache were recent émigrés to the region, they naturally came to settle on or near lands already occupied or used by others. This, and the fact that the Apachean groups relied partly on predatory raiding for a portion of their livelihood, often brought groups into conflict. But from another perspective, the relationship between the semi-nomadic Apachean groups and other tribes, such as the Puebloans of northern New Mexico, can be viewed as symbiotic in character. The sedentary, horticultural Puebloan peoples and the hunting and gathering Apache (including Navajo) developed an economic relationship of benefit to both. Inter-tribal trade brought tribes with different resources together to trade. When such relationships exist between different cultural groups, it is common for more than subsistence resources to be shared. It was this relationship, rather than just the individual tribes, that was severely impacted by the arrival of the Spanish in the 16th century—and the Americans in the 19th century. El Camino Real from the south (as other important trails) no doubt played a large role in facilitating these impacts.

Apache Social and Economic Organization: What are referred to here as the three bands were themselves composed of local extended family groups. Each group consisted of 10 to 30 families, and these groups were closely tied to a specific territory. These groups were organized around individuals who were referred to as "chiefs." However, these positions were earned and maintained by individuals who exhibited specific skills or traits such as bravery, eloquence, or generosity. In short, leadership positions in the groups were fluid, depending on the need and the abilities exhibited by individual group members. The role of a band leader was to lead through influence rather than through any institutional authority or power. Such a leader may have served as a spokesperson in dealing with other groups, but one of the most important roles of such a person was to intervene in and/or help prevent disharmony within the group.

Bands were largely independent of one another and did not come together to form any larger social entity. However, the bands operated under a rule common to all bands: freedom of access to resources. This common rule was not enforced by any institutional authority, but it

did constitute a principle of organization followed by most, if not all, bands. In this way, the band, if not a political entity, can be viewed as a corporate entity that was operated with public goals related to appropriate subsistence activity. Patterns of reciprocity related to the sharing of subsistence resources within the band provided the basis of these public goals.

Figure 5: Agave (Century Plant: Agave arizonica: USDA)

The band itself was organized around kinship. Kinsmen of the leader would form the basis of a group nucleus that was relatively persistent. But kinship was not necessarily a defining character of band membership. Close kinsmen of the leader were free to choose membership in another band, making the band composition somewhat fluid.

Subsistence: The band economy relied primarily on the hunting and gathering of resources within the group's territory. Men hunted. Deer was a primary wild game source of food, but hunters also targeted rats, squirrels, cottontail rabbits, and opossums. In the later historic period, surplus horses or mules were also used as food sources, as were cattle captured in raids on nearby settlements.

Women were responsible for the gathering of plant foods. Due to the fact that desirable plants grew at differing elevations or in different locations at differing times of the year, the extended family group moved frequently to take advantage of plant availability. Of all plant food sources, agave (century plant) *(Agave parryi)* was perhaps the most prized. Agave was gathered, the plant shoots were roasted, and the crown was dug up and backed in underground ovens. Baked agave—mescal—was dried and stored, and provided a food source for many months throughout the year. Other wild plant foods included mesquite beans, yucca, juniper berries, locust blossoms, onions, potatoes, sunflower seeds, many grasses, acorns, piñon nuts, cactus fruit, and chokecherries, to mention only a few. The Chiricahua engaged in some horticultural practices in areas where suitable tillable lands were available. Corn and melons were initially cultivated. Additional cultigens were added later (chilies, beans, pumpkins, squash, potatoes).

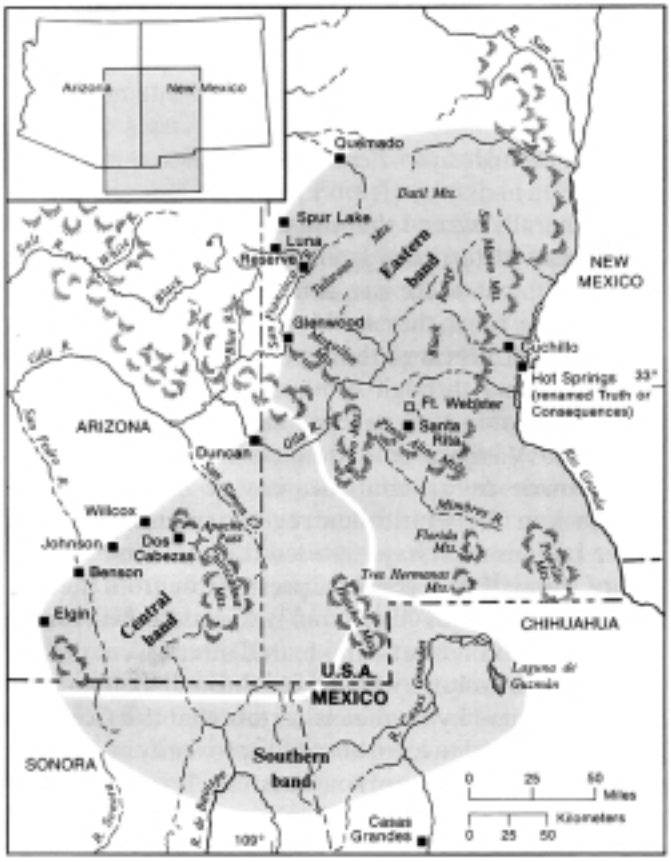


Figure 6: Mid-19th century map of Chiricahua Apache band territories (from Opler 1983:402).

Apache Territory: As subsistence hunters and gatherers, the Apache identified with a larger geographic area, within which

freedom of movement was highly prized. Bands exercised no control over specific lands, but they did identify with large, named geographic regions in which they moved seasonally for hunting and gathering purposes. Some regions, such as those occupied by the Mescalero and the Chiricahua, were marked by high, rugged peaks and generally dry plains—neither conducive to agricultural settlement. Winters in mountain ranges were severe; the flats were dry and hot in summer. While there may have been favored camping sites by bands, movement was primarily determined by the seasonal availability of resources in a given area. The local ecology required such movement over large areas, and limited the size of tribal populations.

With the arrival of newcomers to the region, such as the Spanish explorers and settlers, and later American émigrés, Apache subsistence territory was heavily impacted. The introduction of ranching, irrigation systems, permanent settlement along rivers or streams, or near springs, brought pressure on native wildlife habitat and native plant communities—in many ways the basis of Apache hunting and gathering economies. This was especially true in areas heavily impacted by the introduction of cattle and other domestic livestock that favored plants near water sources normally relied upon by the indigenous population for subsistence gathering. This pattern of environmental disruption was repeated throughout the West, and brought about serious negative impacts on Indian lifeways and survival.

Apachean Worldview and Religion:

El Camino Real not only provided a means by which Spanish colonizers moved men and material into New Mexico. The road also provided a means by which the Spanish government could implement one of its major goals: conversion of the indigenous populations to the Roman Catholic faith. Religious conversion of the North American Indian, an adjunct to the colonization of lands and resources, was a major goal of the Spanish Crown, as well as of the local colony administrators. Because of this, it is important to briefly describe the indigenous religious views of North American Indian populations in New Mexico, because these views were one of the immediate targets of colonizers, administrators, and religious officials. In short, El Camino Real North provided the means not only to gain physical control of local populations and lands, but also the means by which control could be gained over the worldviews and religious beliefs of North American Indians. Control over these beliefs may have had the most profound and lasting effects on Indian peoples of the region.

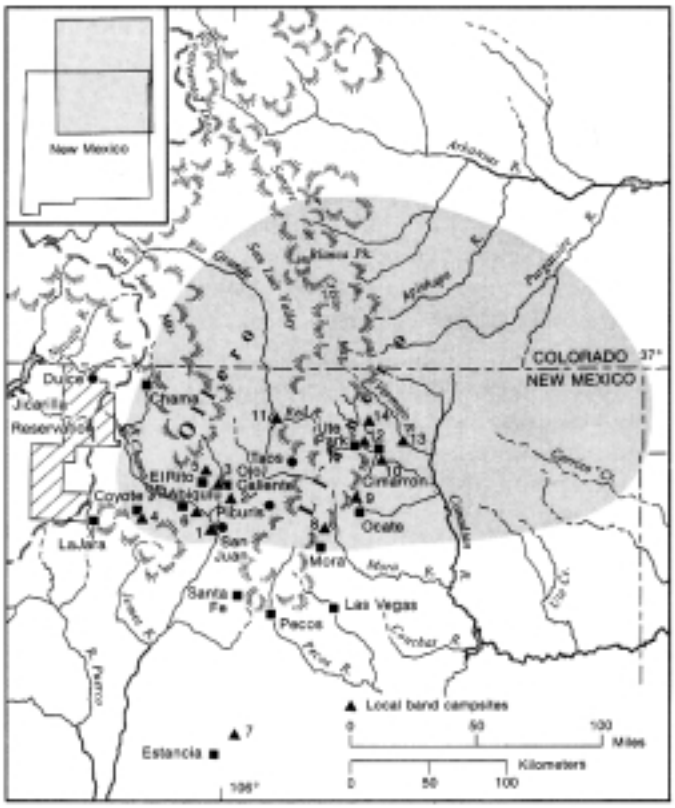


Figure 7: Jicarilla territory with band locations circa 1850 (after Opler in Tiller 1983: 441)

It is difficult to provide a generalized description of tribal religious beliefs and practices for Indian communities. First of all, in traditional tribal societies, there may be a core set of beliefs and religious practices, but they are often personal, not communal; and, while there may be individuals recognized as having traditional religious knowledge, there may be no recognizably distinct social institution such as an organized church. Second, traditional religious beliefs and practices are often so closely intertwined with all other aspects of

tribal social life that it may be difficult to classify any one element as religious, and any other secular. But this fact alone magnifies the impacts to Indian life, because Christian missionary attempts to change religious orientation reverberated through almost every element of Indian social and cultural life.

The Apache bands generally held that there is a giver of life. Prayers might be addressed to this life-giver, but he/she may not have been involved in the ceremonial rounds of the band and its members. Ceremonies were more likely centered on individual ability to acquire supernatural power that pervades the universe. Conducted after consulting with, or being aided by, a traditional religious practitioner, a ceremony might last for few days during which an individual might engage in ritual smoking, singing, or the administration of medicinal herbs or special foods. Ceremonies were conducted to address a wide range of needs—everything from curing or diagnosing illness to finding the power to defeat enemies, provide luck in hunting, or help locate a mate. Animals and plants—even celestial bodies—could be used as channels of supernatural power. Geography also played an important part in religious life and worldview. Among the Chiricahua, a group of deities were referred to as mountain spirits who lived in the highlands that surrounded tribal territory to protect the tribes from disease and enemies. Often religious legends and stories focused on tribal identity and origins, culture heroes who performed feats of courage, or activities that helped explain the differences between tribal groups. It is important to note that Indian religious beliefs encompassed the entire world that surrounded them. Animals, plants, minerals, mountains, streams, springs-the entire physical world around them was seen as possessing a diffuse power or force. The object of ceremony, or of following a seasonal round of ritual, was to allow the individual to tap into this power and manipulate it to meet specific needs. This diffuse power was pervasive; it existed in all things and, if controlled, could be used for good or bad purposes. Rituals and prayer to ensure general success marked all stages of life.

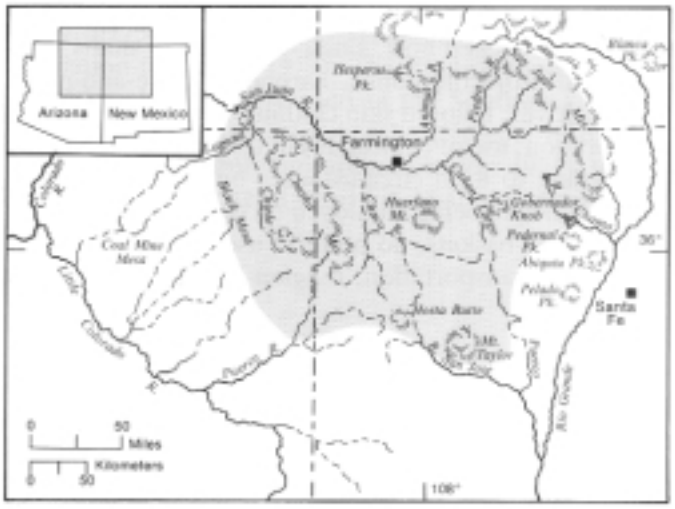


Figure 8: Approximate Navajo settlement area bout 1600 (from Brugge 1983: 490)

Religious belief and ritual was pervasive, in the sense that there were few aspects of the traditional life that were independent of, or not affected by, the supernatural power found in all things. Consequently, supernatural power and religious ceremony touched every aspect of life, and formed the very way individuals viewed the world around them. With this in mind, it is clear that attempts to convert Indian people to new religious views profoundly affected every aspect of traditional life. Recruitment to a new religion was also a wholesale recruitment to a new worldview. Inasmuch as El Camino Real provided the pathway for Spanish missionaries, and a route along which missions were established, it was a significant instrument in fundamental cultural change for indigenous peoples of New Mexico.

The Navajo: When Juan de Oñate traveled up El Camino Real, the Puebloan peoples were virtually surrounded by Athapaskan-speaking peoples. The largest group of Athapaskans in the Southwest at the time of Spanish arrival was the Navajo (*Apaches de Nabajó*). At that time, the Navajo were a semi-sedentary people who practiced a mixed economy (hunting and gathering mixed with limited agriculture) in an area to the west of the Río Grande, extending to today's Four Corners region of New Mexico, Colorado, Arizona, and Utah. Part of this economy included trade with their

immediate neighbors, who were the various Puebloan communities in Northern New Mexico and Arizona.

Anthropologists believe that the Navajo were part of the larger migration of Athapaskan-speaking peoples into the Southwest from more northern regions. There is some debate over the timing and sequence of this migration and differentiation of the various Athapaskan groups (various Apachean groups and the Navajo). The earliest arrival into the Four Corners region may have been around the year 1000. Over time, the Navajo and their Puebloan neighbors developed a symbiotic relationship: The Navajo traded goods resulting from their hunting and gathering economy for agricultural goods from the more sedentary Puebloan peoples. This symbiotic relationship resulted in the sharing of cultural traits.

As was the case with other tribes of the region, Navajo relations with Puebloan neighbors and the Spanish ranged from friendly to hostile, although the Spanish aided the Puebloans during the revolt of 1680. Their alliance with the Puebloans during the revolt and after the return of the Spanish had important consequences for the Navajo. Soon divided after the successful revolt, Puebloan peoples were eventually once again brought under Spanish control. As the Spanish military returned to retake control of the region, many Puebloan people sought refuge with the Navajo. In certain regions, this mixing of cultures brought about changes in Navajo culture, which persist to this day. Although the Navajo generally seemed to reject the highly structured nature of Puebloan societies, they adopted aspects of Puebloan religion. The traits compatible with traditional Apachean values were accepted, while others that were not compatible were rejected. A widely dispersed lifestyle based on animal husbandry; hunting, and manufacture emerged and became a defining character of the Navajo people.

Sheep herding has emerged as a major focus of Navajo life and identity. Residence groups in traditional Navajo communities are organized around the sheep herd. Sheep are central to cooperative aspects of Navajo life, because almost all family members have an interest in the welfare of the herd. Children are taught early on to care for sheep, and soon learn that caring for and tending the herd are cooperative family activities that reflect upon the well-being and character of the family group.

As in other Apachean groups, the Navajo residence group was traditionally the major element of social and political organization. Beyond the local matrilineal- based family group level, there was no clearly defined political organization. Loosely defined larger groups were organized around a local headman, but this larger group was usually mobilized only to deal with outsiders—other Navajos, other Indian tribes, or non- Indians. Some authors have written that Navajo social organization was highly flexible—communal and individualistic at the same time—a characteristic that may account for differing interpretations of Navajo social organization by different writers. Flexibility allows adaptation to rapid change and communal action when necessary, or an emphasis upon the importance of individual choice and action.

As is the case with other tribal groups, Navajo life relies heavily on traditional religious concepts and ceremonialism. Efforts by the Spanish (and later by American missionaries) to convert Indian people in the Southwest to Christianity were only partially successful, because traditional religious beliefs and ceremonies are well integrated into contemporary Navajo life. Navajo religious life is more accurately described as a ceremonial system that recognizes the links between all things and generally seeks to restore harmony to all aspects of Navajo life. Navajo views of their origins and the sacred nature of all things around them, as well as of the importance of place, have important implications regarding identifying and determining any impacts to ethnographic resources resulting from projects proposed by outsiders.

The Navajo today reside on a 16- million- acre reservation- the largest Indian reservation in the United States. The reservation surrounds

the present Hopi Indian Reservation. A tribal President and a tribal council govern the Navajo Reservation. The reservation is broken up into administrative districts called chapters. When working with the Navajo Nation on project work, and in consultation, it is important to contact not only the tribal office, but also the appropriate chapter offices.

Puebloan Cultures: Initial Spanish contact with the Puebloan peoples of northern Arizona and New Mexico took place more than a half-century before Juan de Oñate's march up El Camino Real de Tierra Adentro in 1598 along the Río Grande corridor. Oñate followed the earlier contacts made by Francisco Vázquez de Coronado (1540), Francisco Sánchez Chamuscado (1581), Antonio de Espejo (1582), and Gaspar Castaño de Sosa (1590). These expeditions, or *entradas*, gathered considerable information about the locations and conditions of the Puebloan communities they encountered in the upper Río Grande Valley. It is difficult to assess any complete picture of all the Puebloan communities in the earliest historic period, because each explorer reported only on his own experience. However, it is safe to say that the early Spanish travelers along the Río Grande corridor encountered an extraordinarily complex and sophisticated social environment, consisting of a relatively large and diverse Indian population that was the product of a number cultural cross-currents—cultural cross-currents still debated by researchers.

The Puebloan groups of northern New Mexico form a unit that is quite distinctive from other Indian groups. Unlike the tribes surrounding them, the Puebloan peoples belonged to language groups distinct from the Apachean tribes, lived in permanent settlements, and engaged in sophisticated agricultural practices that were the center of their subsistence activities. Agricultural practices likely found their way to the upper Río Grande from the south, and when adopted by Puebloan ancestors. The introduction of cultivars such as corn, beans, squash, and cotton, which required a secure water source, led to a more sedentary life than those of their neighbors who relied heavily on hunting in wide-ranging territories. The pueblos, or villages, themselves differed markedly from the temporary encampments of hunting and gathering groups, because they were built as permanent, multi-storied compact stone-and-adobe structures exhibiting central plazas.

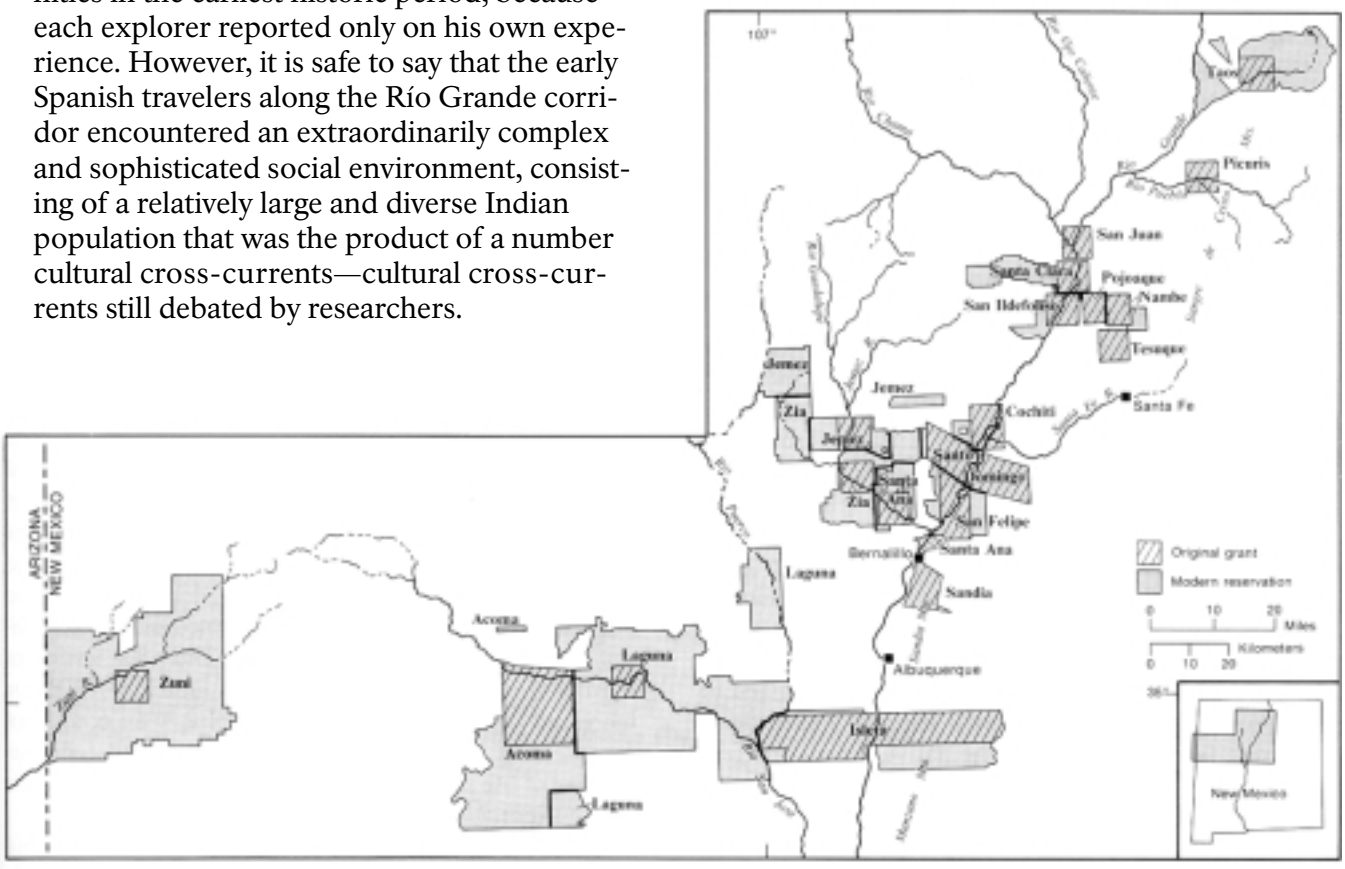


Figure 9: Original royal land grants and modern reservations. Hopi is not shown since there was not a Hopi grant. (From Simmons 1979).

Linguists and anthropologists have divided the various Puebloan communities into two major groups: the eastern pueblos of the Río Grande Valley, and the western pueblos residing the mesa- and- canyon country. The Keresan pueblos, found in the center and to the west of the eastern pueblos, are often classified as a third grouping. This division is based largely on social and cultural differences between the pueblos. Linguistically, the pueblos can be arranged into four major groups. These linguistic differences are important since they suggest different origins for the various Puebloan villages. The Uto- Aztecan language family is found in the Hopi villages (with variations)—it is a language closely related to the Numic languages of the Great Basin region. The Zuni, closely related culturally to the Hopi, speak a language that is perhaps distantly related to California Penutian. The Kiowa-Tanoan language family is spoken in the Puebloan villages of the Río Grande Valley—with three linguistic subgroups: Tiwa in the northern and southernmost Puebloan villages; and Tewa and Towa in the center. As the name suggests, the Tanoans speak a language related to a Great Plains tribe—the Kiowa. The Keresans linguistically stand alone, and do not have known linguistic affiliations. These groupings are most useful in making more recent historical comparisons.

The number of occupied Puebloan communities has changed over time. Pressures of colonization, droughts and famine, conflict with the Spanish administration, inter- tribal or inter- Puebloan conflict, as well as subsequent American control, have all taken their toll on the cluster of Puebloan communities along the path of El Camino Real. After centuries of turmoil and acculturation, the following Puebloan communities are now found in New Mexico and Arizona: Taos, Picuris, San Juan, Santa Clara, San Ildefonso, Nambe, Pojoaque, Tesuque, Sandia, Isleta, Cochiti, Santo Domingo, San Felipe, Santa Ana, Zia, Jemez, Laguna, Acoma, Zuni, Hopi, and Tewa Village. However, there were Puebloan communities originally observed by early Spanish explorers and administrators that were abandoned for a variety of reasons, and the inhabitants of these Puebloan villages found refuge among other Puebloan communities.

Tribes to the North—the Ute: Any description of the cultural environment of El Camino Real must address, even if only in a cursory manner, the tribal groups that found their way into central and northern New Mexico to trade or raid. Beyond the northern end of the road are found the various bands of Ute Indians. Although the primary territory of the Ute bands were the mountains of western Colorado and eastern Utah, they also had a significant presence in Northern New Mexico during the historic period. The Ute were allies or enemies of the Navajo, depending on what was going on at the time. They frequently raided the Apache and Puebloan communities in the upper Río Grande—the historic record reflects nearly 100 reports of such raids. Variable relations also existed with the Great Plains Indian tribes to the east. Relations with the newly arrived Spanish also experienced some shifts. However, with the Spanish, the Ute found a partner in the trade for slaves obtained in raids from other tribes. With the introduction of the horse and increased pressure from the Spanish for slaves, raids by Ute tribesmen on Shoshone and Paiute bands increased.

Various Ute bands were associated with specific territories. However, the Ute were highly mobile, and movement through the various sections of the traditional territory was common. During the early historic period, various authors reported between 10 and 12 Ute bands. These included the Weeminuche, Capote and Muache, on the southern border of Colorado; the Uncompahgre (*Taviwach*), White River (*Parusanuch and Yampa*), in central and northern Colorado; and the Uintah, Pahvant, Timpanogots, Sanpits, and Moanunts of east-central and northeastern Utah.

The eastern Ute bands were in contact with the Spanish not long after they arrived in the area in the early 17th century. During this period, and up to the middle of the 18th century, Ute bands raided the settlements of northern New Mexico to steal horses from the Spanish

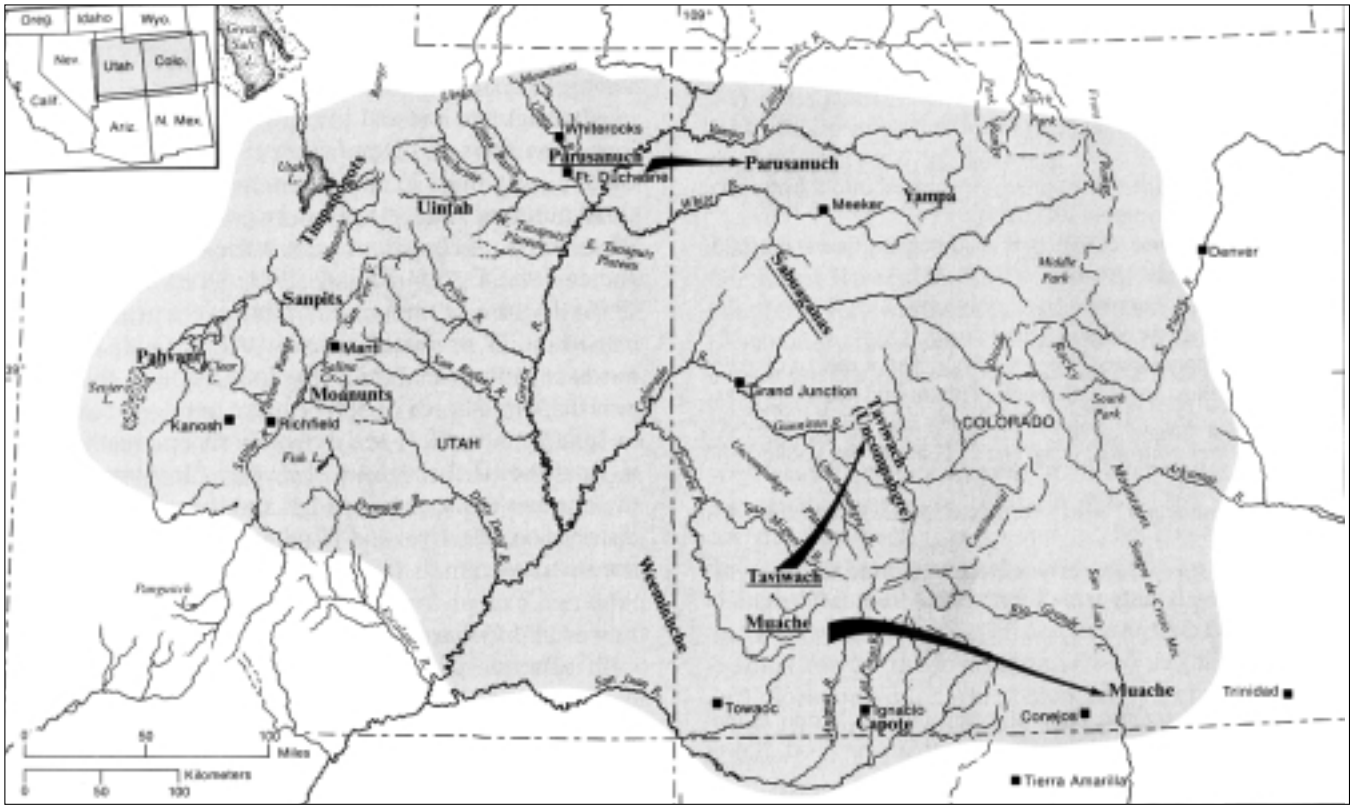


Figure 10: Early 19th century territory of Ute bands in Colorado, Utah, and New Mexico. Underlined band names indicate approximate 18th century locations; those not underlined are pre-reservation 19th century locations. (from Callaway, et al 1986)

and other goods from the Puebloans. As other tribes to the east acquired the horse, there was increasing encroachment on Ute territory from Great Plains groups such as the Arapaho, Sioux, Cheyenne, and Comanche. From the early 1600s until the mid-1800s, conflict with the Spanish was periodic; with the advent of the American period, an 1855 treaty was signed with the governor of New Mexico Territory confining the Ute to Colorado.

Ute influence extended throughout the Rocky Mountain region in Colorado and the eastern basin and range provinces of Utah. The arrival of the Spanish and the establishment of Spanish settlements not only affected tribes in New Mexico and Arizona- the effects were also strongly felt by tribes that rarely came into contact with the newcomers. To some extent, the Ute were a conduit of these impacts for other tribes. After the arrival of the Spanish, the Ute bands took advantage of the Spanish slave market and raided tribes to the west and north for women and children to meet the Spanish need for herders, ranch hands, and general hacienda labor. The memory of such raids, made in concert with Navajo allies in the 18th and 19th centuries, is still strong among the Southern Paiute peoples in southern Utah and northern Arizona.

With the beginning of the American historic period in the mid-19th century, the Ute bands found themselves under pressure from all directions. The Mormon settlers in valleys of central Utah displaced Ute bands from their traditional lands in that territory. By the 1870s, members of various western Ute bands were removed from their traditional homes and confined to the Uintah Reservation in northeast Utah. At the same time, increasing pressures from mining interests and settlers from the east forced the constriction of the Ute territory in Colorado. By the end of the 19th century, Ute territory in Colorado had been reduced from 56 million acres to the present reservations (Southern Ute and Ute Mountain Ute) of approximately 850,000 acres.

Although Spanish laws protected Indian land rights, Oñate, and Spanish settlers to follow, established an administrative system that

extracted tribute and forced labor from the Puebloan communities. Selected administrators were expected to exercise trusteeship over specific Puebloan communities—to protect Indian rights, provide military protection, and aid in efforts to Christianize the population. From the outset of their arrival, Spanish administrators and colonists required laborers on the growing number of farms, ranches, and haciendas established in the area. In response to this need, a system of forced labor *(repartimiento)* was established to provide needed labor. Food, at first freely given to the arriving Spanish, was now extracted as a tax on each Puebloan community to support colonial administrator. In time, the colonial systems established by Spanish administrators and the Roman Catholic Church led to severe abuses. At the same time, church officials feuded with colonial administrators over the control of the Puebloans and their resources. These internal conflicts among the newcomers led to confusion and frustration among the Indian people. Finally, these abuses and the growing frustration only added to the huge impacts already visited on Indian populations—perhaps the most significant being the devastating and depopulating diseases introduced to by the colonists—an event not confined to the experience of contact in the Southwest. The response to such pressures and abuses was a general Puebloan revolt. In August 1680, after lengthy preparations by prominent Puebloan leaders, representatives from various Puebloan communities ordered the Spanish to leave or be killed. The resulting conflict saw the death of over 400 Spanish settlers and a departure of the Spanish from the Río Grande Valley for the next 12 years.

The Great Plains Tribes: Historic records indicate that Great Plains Indian tribes visited, raided, or traded with the Puebloan communities, especially those on the eastern periphery of the Río Grande Valley. Great Plains tribes, like the Apachean groups, were primarily hunters and gatherers who often moved across the landscape to follow hunting opportunities. They may have taken the opportunity to raid the more sedentary Puebloans, but there are ample instances of trade between Great Plains tribes and Puebloans. Great Plains tribes offered buffalo hides, deerskins, meat and tallow, and salt. In exchange, Puebloans provided cotton goods, pottery, corn, and turquoise. Visitors from Great Plains groups included various Apache bands from the east, as well as the Jumano, Kiowa, Comanche, and Pawnee, who have traditions of living in or traveling through the Southwest. Depending on the time period, and the ecological and political circumstances, these groups moved in and out of the area, providing opportunities for intermarriage and periodic raiding, as well as cultural exchange, with the sedentary Puebloans.

The periodic movements of the Great Plains Indian groups in and out of the area surrounding El Camino Real are complex, and require a description not only of shifting ecological circumstances, but also of the ever-changing political environment. Spanish alliances with Great Plains groups, such as the Comanche, as well as with the Ute to the north, depended on existing hostilities with the Puebloans and various Apache bands, and even on pressures from the French, who sought Indian allies against the Spanish. But the important point to make is that Great Plains tribes were certainly in contact with Puebloan communities along the Río Grande (and farther west) when the Spanish first arrived. Regardless of how they are characterized by various authors, the relationships among these groups were certainly affected by the introduction of a large contingent of Spanish military, administrators, priests, and colonizers. El Camino Real was a major factor in the introduction of these individuals and institutions to the region.

Archeological and Historic Resources

Significant cultural resources associated with El Camino Real de Tierra Adentro are archeological and historic sites, cultural landscapes, ethnographic resources, and sites with high- potential for public benefit that have been identified in accordance with the National Trails System Act, sections 12(1) and 12(2). Many of the archeological sites and historic structures along El Camino

Real have a direct thematic relation to the trail. The sites listed in this section are those that have a significant, direct connection to El Camino Real. Many sites that are well beyond the Río Grande Valley and are not directly related to the route have not been included in this discussion. The sites and segments described are those along El Camino Real from El Paso, Texas, to San Juan Pueblo, New Mexico. The development of El Camino Real is closely tied to the many prehistoric and historic North American Indian groups who lived along the corridor and who used it for centuries. Because of the magnitude of the potential sites, only those with strong relationships with the trail have been included.

Archeological Resources - El Camino Real has been described as the longest and most extensive archeological site complex in New Mexico. It is a major archeological resource that provides new light into significant periods of the history of New Mexico and the United States. The artifacts, campsites, and structures that investigators have identified along the trail provide a unique view into New Mexico history and the lives of those who made it.

Although the general route of El Camino Real de Tierra Adentro is clear and a number of specific locations associated with the trail have been documented, in many other areas the precise location of the trail is not known. Historic activities and natural processes of erosion and deposition have undoubtedly destroyed or obscured many trail segments. In other areas actual physical traces of the trail are likely, but historical and archeological documentation is incomplete.

This investigation, which focused on 67 miles (108 kilometers) of the trail, uncovered information to document 39 sites and identified 127 road segments. Most of this work was concentrated on three geographic areas: Jornada del Muerto, Bosque del Apache, and the regions of La Bajada and Santa Fe. Marshall's (1991) investigation revealed evidence of early colonial use. One of the earliest sites associated with the colonial period is Las Bocas encampment, where Glaze E Pecos Polychrome has been found in Jornada del Muerto near Paraje de San Diego and Rincon Arroyo. Several other projects have considered specific segments of the trail, mostly in the Santa Fe area.

La Majada North road is another area where scattered artifacts document the prehistoric, colonial, Mexican, and territorial use of El Camino Real. (Note: La Majada North road is named for La Majada Grant in Sandoval and Santa Fe counties. The grant includes La Bajada ["the descent"], which is the mesa and cliff of volcanic basalt. La Bajada is the dividing point between the Spanish provinces of Río Arriba ["upper river"] and Río Abajo ["lower river"].) Prehistoric early Glaze period ceramics were found over the mesa, an area that apparently was farmed during this time. Three ceramics clusters from the colonial period have also been identified: Two Tewa Polychrome from ca. 1650 to 1725, and a plain red soup bowl. A variety of Territorial period artifacts have also been found along the road: Hole- in- cap cans, sardine cans, bottle glass, stonewares, porcelain, and other earthenwares, and potsherds of ironstone.

One important archeological site is the Paraje de San Diego near the southern end of Jornada del Muerto. It was an important campsite where northbound travelers prepared for the journey and southbound travelers rested. A New Mexico State University field school sponsored by the BLM recovered a wide range of Colonial period ceramics from this site (Fournier 1996; Staski 1996).

Scurlock, et al. (1995), have documented archeological resources on Tomé Hill, a topographic feature that had special significance to the prehistoric pueblos of the area. The site includes a multi- room- block village site, two probable shrines, and a number of petroglyphs.

The Archeological Conservancy, a nonprofit preservation organization based in Albuquerque, has acquired several sites that are important to the history of El Camino Real. San Jose de las Huertas is considered to be the best- preserved Spanish colonial village in New Mexico. This 28- acre site north of Albuquerque, in the vicinity of Placitas, was occupied from 1764 to 1823. The walled village contains as many as 10 undisturbed house mounds.

The Archeological Conservancy also owns the remains of a Spanish colonial ranch, one of numerous sites known to date from the Colonial period. The site, with four rooms and a *torreon* (circular tower) feature, was built just south of Santa Fe along the Santa Fe River between 1610 and 1680.

Historical Resources -

Prehistory: Long before the coming of Europeans, North American Indian trails and pathways crisscrossed many areas of the Western Hemisphere. Over thousands of years, North American Indians learned the best routes or corridors for travel. By the coming of Europeans, they had identified river crossings, valleys, canyons, passes through mountain ranges, and watered areas for travel in their respective areas of use. In the deserts and forests of North America, in particular, Indian people established trade and hunting routes. In their way and in their time, they communicated with other people in other lands. Their trails established the practical routes that crossed large regions in which they lived. In effect, they influenced the pattern of colonial roads, and, to a great degree, modern highways that would later be developed by Europeans.

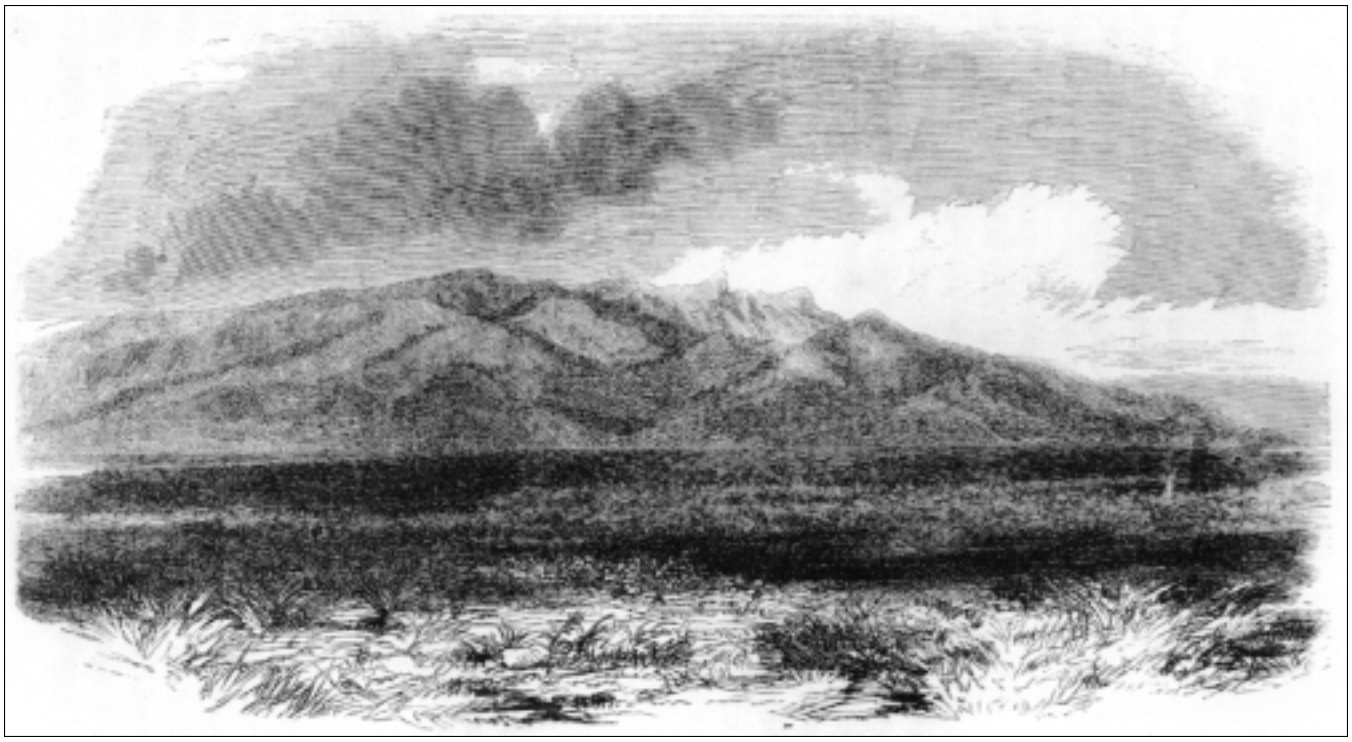
Spanish Exploration: The first explorers and settlers who developed El Camino Real generally followed indigenous routes that traversed present- day Mexico and what is now the southwestern part of the United States. For example, one route used by Aztec and other native traders originated in the Central Valley of Mexico, and ran northward through the *meseta central*—the central corridor between the Sierra Madre Occidental and the Sierra Madre Oriental. It led north to major Indian centers such as Paquimé (Casas Grandes), which may have traded with the New Mexico Indian Pueblos along the Río Grande. Numerous archeological sites along the trail document the presence of Indian groups who lived, traveled, and traded along the trail corridor. Later, El Camino Real de Tierra Adentro followed the same corridor.

Soon after Hernán Cortés conquered central Mexico, Spaniards began to use the route that would become El Camino Real de Tierra Adentro. In the early years, the trail facilitated the development of the northern mining frontier, particularly as silver was discovered north of Mexico City in the 1540s. The establishment of Zacatecas by 1546 represented an important step in the development of the trail. As Spanish settlers pushed northward in the discovery of other silver mines, the first part of El Camino Real became known as *El Camino de la Plata* (the silver road).

With expansion came the demand for services, protection, and pacification of frontier areas. Cattle drovers moved herds hundreds of miles to mining areas. Merchants, bakers, butchers, tailors, and other small entrepreneurs established themselves within mining camps to sell their wares. In response to the demand for protection against warring tribes by investors, the Spanish Crown sent missionaries, soldiers, and settlers northward to establish religious and military institutions, as well as communities, along the route. Movement to the north continued, and by 1575, the frontier line had moved to the Santa Bárbara- Parral mining area in the province of Nueva Vizcaya (present- day Chihuahua).

Spanish Settlement: Leading settlers to New Mexico in 1598, Juan de Oñate blazed a new segment of El Camino Real directly north from Santa Bárbara to the crossing of the Río Grande at a place that came to be known as El Paso. From there, Oñate and his settlers closely followed indigenous routes along the Río Grande, thus establishing the general location of the trail, as it would be used for almost three centuries.

After reaching within sight of the Organ Mountains near present- day Las Cruces, Oñate and 60 horsemen departed the slow-moving *carreta* (horse- drawn cart) caravan and moved northward in advance to select a settlement site. Along the way, Oñate and his men noted the distinctive natural landmarks that highlight the corridor of El Camino Real. Following the Río Grande, they passed the



Fray Cristobal Mountain, 1852.

Fray Cristobal Mountains (which the soldiers derisively named after spotting a silhouette on the serrated ridge that looked like one of the priests on the expedition). They continued north, visiting Indian pueblos along the Río Grande, until they reached San Juan Pueblo.

Meanwhile, the *carreta* caravan found a flatter route of travel on the east side of the Organ Mountains. That route of El Camino Real came to be known as Jornada del Muerto—"dead man's journey." Nearly 80 miles long, Jornada terminated near present San Marcial, where the caravan rejoined the river. Short of food, the settlers reached Teypama, where native people gave them corn. In remembrance of their kindness, the settlers remarked that they named the place *Socorro* (relief), "because the people there furnished us with much maize." Beyond Socorro, the caravan followed the river past Isleta, the valley of present-day Albuquerque, and northward beyond San Felipe, Santo Domingo, and San Ildefonso pueblos before reaching their destination at San Juan.

At the confluence of the Río Grande and the Río Chama, at the small pueblo called Caypa, which they renamed San Juan de los Caballeros, the settlers worked hard to establish living quarters and set up their planting fields while the summer growing season lasted. (Note: The Oñate "Itinerary" refers to this site as "Caypa"; other sources identify it as 'Ohke"). Oñate intended to build the capital of the province next to the pueblo, but the plan was abandoned. Although some remained at San Juan de los Caballeros, Oñate ordered the settlers to move to a new site a short distance down river during the winter of 1599-1600. This site, which would be the province's capital for a decade, was named San Gabriel, or San Gabriel del Yungue.

Greater changes affected the colony. After nine years of strife between Oñate and some settlers, he was exiled from New Mexico by Spanish officials. The Crown continued to support the colonizing efforts and in 1610 appointed Pedro de Peralta governor of the province. In accordance royal instructions, Peralta established Santa Fe as the capital. Throughout the 17th century, it was the only incorporated Spanish town north of Chihuahua. Soon after its establishment, Santa Fe became the terminus for El Camino Real. Trade caravans from Mexico City reached Santa Fe, while the mission supply caravan

reached Santo Domingo, the ecclesiastical capital of New Mexico.

Caravans reached New Mexico every one to three years. Although few details about the caravans have survived, a composite description can be reconstructed. The 17th - century mission supply train likely consisted of 32 wagons, escorted by a company of soldiers. The trail was further enlarged by herds of cattle, goats, sheep, and draft animals, as well as small farm animals, cats, and dogs. The wagons were heavy, and when fully laden, they required a team of oxen. Each wagon had two teams, and alternated between them. Caravans bound north from Mexico City carried not only friars and mission supplies, but also settlers, newly appointed officials, baggage, royal decrees, mail, and even private merchandise. Southbound caravans from Santa Fe carried outgoing officials and friars, traders, and the produce of the province, much of which was sold in the mining communities to the south along El Camino Real.

Throughout this early period, there was constant development along El Camino Real from Mexico City to Santa Fe, including mining, ranching, and farming. One of the central activities was milling. By the beginning of the 17th century, mills, animal - driven or water-powered, characterized the agricultural and mining haciendas. Mills were built along El Camino Real, and because of their economic importance they became associated with place names along the route. In time, haciendas, with their mills, were associated with extensive landholding patterns characterized by large fortified houses. So impressive were certain haciendas that they became towns on El Camino Real where travelers could find shelter and protection. Spanish frontiersmen depended on a line of presidios to defend their properties.

As the 17th century neared its end, the Pueblo Revolt of 1680 exploded. Pueblo Indians, united with Utes and Apaches, sent New Mexico settlers reeling south to El Paso, where they remained for 12 years. The revolt resulted from Indian resentment against Spanish colonial occupation. The Pueblo Revolt is part of the history of El Camino Real, for the trail was the route used by the Hispanic refugees as they fled southward from Santa Fe, past the pueblos of the Río Abajo, through the Jornada del Muerto, and beyond to El Paso. From El Paso, Spanish officials led sorties northward along El Camino Real to assess the extent of the revolt, with the hope of reconquering New Mexico. In 1692, the reconquest began. Led by Diego de Vargas, the Spanish army moved northward along El Camino Real and succeeded in gaining a foothold in Santa Fe. Although there was intermittent resistance from the Pueblo Indians for several years, settlers and Puebloan peoples learned to live in harmony.

Spanish Military and Commercial Activities: The Pueblo Revolt and encroachment by French traders who explored westward from their Louisiana settlements along the Mississippi River awakened concerns over the security of New Spain's frontiers. During the course of the 18th century, military installations were established along El Camino Real to bolster defenses against both European rivals and resisting Indian groups, who posed more immediate problems to Spanish settlers. Periodic inspections by Spanish military officials led to changes in frontier defenses, and also provided descriptions of the frontier in their reports, travel accounts, and maps of El Camino Real and its environs.

After settlers and missionaries resettled New Mexico in 1692, increased numbers of caravans headed north. Two important new settlements were founded early in the century: Albuquerque in 1706, and Ciudad Chihuahua in 1709. The establishment of these towns resulted in larger- scale trade activities and new names for that segment of the trail, which became *El Camino de Chihuahua*, running south from New Mexico, and *El Camino de Nuevo Mexico*, running north from Chihuahua. Aside from commercial use of El Camino Real, renewed migration also resulted from the development of trade centers in communities with colonial roads that connected with El Camino Real.

During the 18th century, New Mexicans traded at a variety of local fairs. Off of El Camino Real, fairs at Taos, Pecos, and Galisteo attracted many merchants. New Mexican traders met with Comanches, Apaches, Utes, Navajos, and others who brought buffalo hides, deerskins, blankets, and captives to be sold or exchanged as slaves. They bartered horses, knives, guns, ammunition, blankets, *aguardiente* (alcohol), and small trinkets. In the fall, large New Mexico caravans moved south along El Camino Real to attend fairs at Ciudad Chihuahua.

Spanish law restricted trade and immigration from outside the empire, but local officials were often less strict. In the early 19th century, Taos drew French, English, and Anglo-American traders and trappers who initiated immigration from and trade with the United States. The 1807 capture of an American military party led by Lieutenant Zebulon Montgomery Pike in Spanish territory north of Santa Fe symbolized intrusion by the new country to the east. Just over a decade later, Anglo- American, French, and British traders increasingly moved along El Camino Real, taking advantage of the inability or unwillingness on the part of local authorities to control their activities.

The Mexican Period: After Mexico gained its independence from Spain in 1821, El Camino Real de Tierra Adentro, now a *camino nacional* (national road) of Mexico, expanded in importance as a trade route. Almost overnight, the *camino nacional* became linked with United States markets via the Santa Fe Trail from Missouri. In time, the trail from Missouri came to be known as the Santa Fe- Chihuahua Trail. Accordingly, much of the merchandise hauled across the plains did not remain in New Mexico; it was carried into the interior of Mexico along the *camino nacional*.

New Mexico merchants made important contributions to the growth and geographical expansion of trade along the former El Camino Real. They developed their own commercial networks, and by 1835 they were the majority of the people traveling into the Mexican territory, owned a substantial portion of all the merchandise freighted south, and specialized in hauling domestic goods. After 1829, they expanded trade along what came to be called the Old Spanish Trail, which linked Santa Fe, New Mexico, present- day Arizona, Utah, and California. Throughout the 19th century, they continued to trade along the former El Camino Real, and they maintained close economic ties with their Mexican counterparts for decades after the Mexican-American War.

The Mexican War: In 1846, the former El Camino Real became an invasion route into Mexico. During the Mexican- American War, Stephen Watts Kearny, commander of the United States Army of the West, led his men over the Santa Fe Trail. Moving south from Las Vegas, he captured Santa Fe. Kearny then proceeded on to California. Meanwhile, Colonel Alexander Doniphan was appointed to command the U.S. troops stationed in New Mexico, and he moved south along the Chihuahua Trail. Near Las Cruces, at Brazito, a *paraje* (stopping place) on El Camino Real during both Spanish and Mexican periods, U.S. forces clashed with Mexican troops. Doniphan's victory at the Battle of Brazito led to the U.S. occupation of El Paso. Two months later, Doniphan captured Ciudad Chihuahua.

The Mexican- American War produced major political changes along the former El Camino Real, but commercial activities on the trail and across the new border between the United States and Mexico continued. Equally important, the cultural interaction and communication among the people who lived and worked along the trail never ceased.

United States Territorial Period: In the early Territorial Period of New Mexico, international commerce continued along the route from Santa Fe to Ciudad Chihuahua. During that time, the former El Camino Real continued to serve as a conduit for trade and immigration. To control the route, forts and garrisons were established along El Camino Real in the area between Mesilla and Socorro.

In 1862 the Civil War reached New Mexico, when Confederate forces under Major Henry H. Sibley came up the Río Grande from El Paso to Valverde, an old *paraje* of El Camino Real, on the banks of the river. Colonel Edward R. S. Canby, the commander of the Union forces in New Mexico, marched his troops from nearby Fort Craig to attack Sibley's forces. After a bloody encounter, the Confederate forces claimed victory. Soon after the battle of Valverde, Albuquerque and Santa Fe fell to the Confederate army. Sibley had succeeded in capturing strategic point along El Camino Real, but his plans came to naught. His objectives to seize the Colorado gold fields and establish a route to the Pacific Ocean came to a sudden stop in February 1862, when he was defeated at the battle of Glorieta Pass, southeast of Santa Fe. As the Confederates retreated south of Albuquerque, the final battle in New Mexico took place at Peralta, on the former El Camino Real.

In the years after the Civil War, the nature of the commercial activities along the trail from New Mexico changed again. With the growing presence of military forces in the West, supplying U.S. Army forts became one of the major sources of income for New Mexicans. The merchants associated with the former El Camino Real depended on federal government expenditures to supply army installations and the various Indian tribes. Most New Mexicans did not have the resources to continue the type of mercantile activity required by the evolving trade—the margin of profit had become so small that they were unable to make a profit. In 1880, the railroad reached Santa Fe, eclipsing the use of the Santa Fe Trail. Two years later, the railroad line had reached El Paso from Albuquerque, effectively leading to the decline of the road- based transportation on the former El Camino Real.

Significance: Roads are a necessary and significant function of the historical process of nation states. Historic trails throughout the Americas are indigenous in character and purpose. Factors regarding their development before European intrusions influenced the location of many colonial roads, particularly El Camino Real de Tierra Adentro, which were established between 1521 and 1821. The origin of almost all colonial roads in Mexico and the United States are therefore obscure. They began in an unspecified time when prehistoric Indian peoples blazed networking trails north from the Valley of Mexico, ultimately joining those along the Río Grande in New Mexico and Texas.

Prehistoric Trails: Prehistoric tribes along the Río Grande established routes for trade and communications long before the arrival of the Europeans. Pre- Hispanic archeological sites from central Mexico to northern New Mexico document the varied Indian cultures who lived along variant trails that later formed the 1,600-mile (404 miles of which lie in the U.S.). Spanish colonial route for transportation and communication. Travelers along these prehistoric routes disseminated new ideas and technologies that influenced Indian tribes, principally the Río Grande Pueblos. Although pre-Columbian roads leading to the New Mexico Pueblos were not well developed beyond the central highlands, routes from the Central Valley to places lying within the edges of the Aztec domain were, on the other hand, better defined for travel. Unlike later roads developed by Europeans for wagons and beasts of burden, indigenous trails were, in contrast, primitive foot trails.

Historic Roads and Trails: The 16th- century Spanish colonial roads combined ancient trails with trails newly constructed, some of them with bridges, to areas with economic potential. Historically, the east- west and south- north pathways from Mexico City followed the pattern of Spanish expansion. Early colonial roads connected Spanish ports, towns, fortifications, mines, and Catholic missions, thus forming a new network of trunk roads known as *caminos reales.* One such road was El Camino Real de Tierra Adentro, which ran from Mexico City to Santa Fe in New Mexico. The northern part of El Camino Real was established by Juan de Oñate in 1598, almost a decade before the first English colonists landed at Jamestown, Virginia. The trail, 1,600-

miles (404 miles which lie in the U.S.) in length, provided the major link between the province of New Mexico far in the northernmost reaches of Spain's vast empire in North America, and Mexico City, the capital of the viceroyalty of New Spain.

Notwithstanding the contributing influence of indigenous routes, the historical period of significance for the portion of El Camino Real in the United States extends from 1598 to 1882. In Mexico, the route of El Camino Real began in the early 1540s. Throughout that period, traders and travelers along El Camino Real contributed to the cultural interaction among all people, European and Native alike, who lived along it. In its historical development, it followed the paths of miners, ranchers, settlers, soldiers, missionaries, and native peoples and European emigrants who settled places along the way. Narrative accounts of the route describe its variants throughout the 16th, 17th, 18th, and 19th centuries. These written records contain a wealth of information about daily life, settlements, and topography, as well as place names, along the trail.

El Camino Real de Tierra Adentro fostered cultural exchanges between Europeans and Indian peoples. Along it were transmitted elements of western European civilization ranging from language to Christianity, science, medicine, literature, architecture, folklore, music, technology, irrigation systems, and Spanish law. Among legal concepts currently used in the American legal system that made their way along El Camino Real are community property laws; the concept of first use- first priority in water rights; mining claims; and the idea of sovereignty, especially as applied to North American Indian land claims.

Similarly, Spanish frontiersmen learned new ways—Indian ways—of surviving in the remote wilderness of North America. Food exchanges, medicinal practices, lore, craft industries, and other cultural amenities crossed from indigenous hands to those of Europeans. Interestingly, chile peppers, grown by natives in the Valley of Mexico, were introduced by Spanish settlers to the Río Grande Pueblos. While there were many benefits from the exchange of Spanish and indigenous cultures, many native ways were lost because of the influence of Spanish culture, and later, because of the overpowering exclusivity of Anglo- American culture.

Commerce has always been an integral component of the history of El Camino Real, but the nature and the extent of the commercial activities evolved with time. In the early years, the mission caravan from Mexico City was an important source for trade in New Mexico. Throughout the 17th century, other itinerant traders made their way into New Mexico for trade. Trading activities, moreover, also included trade fairs at particular pueblos that attracted local Spanish settlers.

El Camino Real and the Santa Fe Trail Connection: The history of El Camino Real de Tierra Adentro is shared by two nations—Mexico and the United States. After Mexican independence in 1821 and the opening of the Santa Fe Trail from Missouri to Santa Fe, Mexico legalized trade with the United States. By the mid- 19th century, El Camino Real, now a *camino nacional* of Mexico, had become an integral part of an international network of commerce. By the end of the 19th century, trade within the commercial network had resulted in the transportation and exchange of millions of dollars worth of merchandise between Europe, the United States, New Mexico, and other provinces of the Mexican republic.

The geographical boundaries of the commercial network developed around a portion of the old El Camino Real, known as *El Camino de Chihuahua* (the Chihuahua Road). Indeed, the connection of the Santa Fe Trail with *El Camino de Chihuahua* became known as the Santa Fe- Chihuahua Trail. Effectively, it connected commercial interests between Mexico and the United States at Santa Fe. This extensive pattern of economic relations involved Europe and North America.

Trail activities had a major effect on the landscape along El Camino Real corridor. In addi-

tion to introducing new foods into New Mexico, traders and settlers affected biotic communities and promoted horticultural diffusion. The introduction of livestock from Mexico, along with commercial plants such as apples, apricots, cherries, grapes, garden varieties of smaller plants, and exotic flora, changed the landscape and its uses on and along the route of El Camino Real. Other enterprises, such as mining and large- scale commercial enterprises, contributed to the dramatic alteration of the landscape associated with the trail.

El Camino Real has been associated with notable historic figures of both the American and Hispanic frontiers and pivotal events in the history of the western United States. The first important individual associated with the segment of El Camino Real in the present- day United States was Juan de Oñate. He was the son of one of the founders of Zacatecas and Guadalajara. In 1598, Oñate established the northern end of El Camino Real, and founded the first Spanish capital of New Mexico at San Juan de los Caballeros. As a result of Oñate' s colonizing efforts, Pedro de Peralta established Santa Fe, destined to be the enduring capital of New Mexico. Another important Spanish colonial figure, Governor Diego de Vargas, reestablished New Mexico in 1692 after the Pueblo Revolt of 1680 had forced Spanish settlers to flee south on El Camino Real to El Paso.

El Camino Real in Historical Travel Literature: Much has been written about El Camino Real by travelers who rode along it. One of the earliest histories of life on El Camino Real was published in 1610 by Gaspar Pérez de Villagra and entitled *Historia de la Nueva Mexico, 1610*. Over a century later, in 1726- 1727, Brigadier Pedro de Rivera inspected fortifications in New Mexico and wrote an extensive report on conditions in the province. Fifty years later, in 1777, Father Juan Agustín Morfi wrote another report describing problems in frontier New Mexico. His report became an important and enriching literary endeavor of the Spanish colonial period, and has been printed several times in the 20th century. Other military reports, principally those by the Marqués de Rubí (1766) and Juan Bautista de Anza (1779), also describe conditions in New Mexico during the 18th century.

In the 19th century, accounts by Anglo-American travelers and traders piqued the imaginations of Americans. For example, the adventurous accounts by Zebulon Montgomery Pike and Josiah Gregg, both of whom spent an appreciable time along the route of El Camino Real in New Mexico and Chihuahua, stimulated U.S. expansion into the area. Such accounts featuring El Camino Real tended to highlight the impact the trail has had on the history of a large part of the present United States.

The Legacy of El Camino Real: The last years of El Camino Real demonstrated the diversity of its legacy. New Mexico merchants of the 19th century, whose ancestors had come with Oñate or other colonizing groups in the 17th century, carried on commercial activities along the ancient trail. Among them, José Felipe Chávez, from Belen, who became a successful entrepreneur known as *El Millionario* (the millionaire), was easily one of the richest men in New Mexico Territory. His skillful management of personal resources, local products, and business connections, coupled with hard work and determination, allowed him to strengthen his economic standing and gain considerable influence. His career was exceptional, but not unique. Other New Mexican merchants rivaled him in wealth, influence, and skills. Miguel Antonio Otero, New Mexican delegate to Congress before the Civil War, had been deeply involved in trading before his political career and continued to pursue this activity after the end of his congressional term.

Once the Santa Fe Trail extended its route to Chihuahua, Anglo- Americans joined the tradition. As many of the Anglo- American traders along El Camino Real, Josiah Gregg first went to New Mexico with a caravan from Missouri. Eventually, he traveled throughout Mexico, writing an account of his observations. Another historical figure closely linked

to the trail was territorial governor Henry Connelly, who had been an influential Santa Fe Trail merchant along El Camino Real.

Military figures of the 19th century also participated in the historical pageantry that marched along the ancient route. Aside from General Stephen Watts Kearney, who led his Army of the West into Santa Fe during the Mexican War, his colleague, Colonel Alexander Doniphan, similarly deserves mention. Not only did he defeat Mexican forces at Brazito, a *paraje* along El Camino Real, in 1846, but he also later captured Ciudad Chihuahua. During the Civil War, three notable leaders appeared on the scene who would stand out in the history of El Camino Real. One was Confederate Major Henry H. Sibley, who marched his troops north along El Camino Real to capture Albuquerque and Santa Fe. Another, Colonel Edward R. S. Canby, the commander of the Union forces in New Mexico, attempted to stop Sibley at Valverde. The third was Manuel Chávez, a New Mexican whose family hailed from Atrisco, on El Camino Real in Albuquerque's South Valley. Chávez played an important role in Sibley's defeat at the battles of Glorieta Pass and Apache Canyon in 1862, and was immortalized in Willa Cather's novel, *Death Comes for the Archbishop* (1999). Cather promoted a romantic view of Santa Fe and New Mexico.

With the completion of the Atchison, Topeka and Santa Fe Railroad line between Albuquerque and El Paso in 1882, the use of the trail on the U.S. side of the border began to decline. However, it continued to be important because it provided an essential link between New Mexican merchants and their counterparts in Mexico. Equally important, the railroad line on the U.S. side paralleled the route of El Camino Real between Albuquerque and Socorro. The close cultural and economic ties that have characterized the history of El Camino Real continued into the 20th century. It is no longer used as a trail, having been supplanted first by the railroads, and later by highways—particularly portions of U.S. Highway 66, U.S. Highway 85 and Interstate 25—but the route of El Camino Real can still be traced through the development of the towns it served. In that way, it has maintained its significance. El Camino Real has become a symbol of the cultural interaction between Mexico and the United States, and of the commercial exchange that made possible the development and growth of the greater Southwest of the United States.

Geology

The entire length of El Camino Real in New Mexico lies within the Basin and Range Physiographic Province. The province occupies the southwestern and central parts of the state, extending northward to Taos County. The Province is over 200 miles wide in the south, narrowing northward to several miles wide in Taos County. It includes fault block mountains and plateaus; volcanoes and lava flows; and broad, flat alluvial plains. The Río Grande rift, a series of north- south parallel faults, occupies the western part of the province. The Río Grande Valley is the surface expression of the rift. The province is bound by the Colorado Plateau on the west, the Great Plains on the east, and the Southern Rocky Mountains on the north.

Rocks of the earliest geologic age (Precambrian) to the present (Quaternary) occupy the Basin and Range Physiographic Province. Some of the mountain ranges have Precambrian granites and associated igneous rocks exposed in their uplifted cores. Overlying the Precambrian rocks are mostly sedimentary rocks (limestone, sandstones, and shales) of Paleozoic and Mesozoic age, exposed in uplifted fault block mountains and along mesa and plateau escarpments and canyon walls. Overlying these are sedimentary and volcanic rocks of Cenozoic age. Quaternary alluvium (sand, gravel, silt, and clay) fills the valleys, including the Río Grande Valley, through which most of El Camino Real passes.

Scenery

Scenery is the aggregate of features that give character to the landscape. El Camino Real de

Looking south from the top of La Bajada. Camino Real is in center of photo.

Tierra Adentro National Historic Trail route traverses a range of natural and cultural landscapes in the Basin and Range and the Southern Rocky Mountains physiographic provinces. The Basin and Range province is characterized by landforms that include rugged and steep fault-block mountain ranges; broad basins, such as Jornada del Muerto; and volcanic uplands. Contrasting with the mountain ranges in this province are broad valleys. The national historic trail traverses lands within and along one of these valleys—the Río Grande—as travelers moved north and south along this trail in the United States. Draining into the Río Grande are numerous arroyos and drainages cutting through terraces. On the northern end of the trail, travelers encountered landscape features typical to the Southern Rocky Mountain province. Typical landform features in the Southern Rocky Mountain province include mountain systems, intermountain valleys, hogbacks, mesas, plains, and plateaus.

Cultural influences within the foreground/middle- ground corridor along the national historic trail have altered the natural landscapes of seen areas in many locales. The most prominent cultural features include various transportation and utility corridors, communication towers, cities and communities, farming and ranching activities, and flood control and diversion dams. Vegetation along segments of the trail has also been altered from what the original travelers experienced in moving back and forth along the trail.

Of the 404 miles of the national historic trail, 60 miles of definite, probable, and speculative trail segments cross BLM- administered lands within the boundaries of three BLM field offices. The BLM uses a Visual Resource Management (VRM) system to identify and manage scenic values on federal lands administered by the agency. The VRM system includes a visual resource inventory, which classifies visual resources on BLM land into one of four categories (Class I, II, III, or IV), and sets management objectives through a Resource Management Plan process. The manner in which the classifications are determined is explained in BLM Handbook H- 8410- 1, Visual Resource Inventory. In addition to inventory data, the VRM classes can reflect management considerations. Each VRM class describes a different degree of modification allowed in the basic elements (form, line, color, and texture) found in the predominant natural features of the landscape. Classes I and II contain the most valued visual resources. Class I, the most highly valued and visually sensitive to modification, is assigned to those areas in which decisions have been made to maintain a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality; sensitivity level; distance zones; and, where necessary, management considerations. Class III contains those with moderate values. And Class IV contains the least valued visual resources. Appendix H provides a more detailed description of these classes and their management objectives. Other non-BLM lands crossed by the national historic trail are not managed by the VRM classification system.

In the Las Cruces Field Office, VRM classes were assigned in the 1993 Mimbres RMP and the 1985 White Sands RMP. In the Socorro Field Office, VRM classes were assigned through the 1989 Socorro RMP. The area of concern within the Taos Field Office has not been classified for visual resources through the Resource Management Plan. The approximate mileage of trail running through the different VRM classifications on public lands managed by the BLM is shown in **Table 7** on the next page.

Soils/Vegetation/Noxious Weeds

Approximately one- half of the United States portion of El Camino Real passed through the Río Grande Valley. Today much of the vegetation of the Río Grande Valley has been converted to irrigated farmland, or is in housing development. Along the banks of the Río Grande, portions of the *bosque* (riverside forest) have been protected from farming and housing development. However, even in the protected areas, there have been extensive invasions by Russian olive and salt- cedar plants. Both of these species are considered to be Class C noxious weeds on the New Mexico Noxious Weed list, published September 20, 1999.

Table 7:
Visual Resource Management Calssifications
For BLM-Administered Lands (in Miles)*

VRM Class	Taos Field Office	Socorro Field Office	Las Cruces Field Office
I	-	-	-
II	-	1.1	1.1 (1.1)
III	-	12.5	3.6 (0.6)
IV	-	0.6	23.9 (7.6)
No Assignment	16.9 (0.3)	-	-
Total	16.9 (0.3)	14.2 (0.0)	28.6 (9.3)

*Numbers in parenthesis represent miles of high-potential segments

Most of the valley soils are classified as irrigated soils, moderately deep to deep soils, including light, medium, and fine- textured soils mostly on smooth topography and generally high in inherent fertility, except nitrogen.

The upland portions of El Camino Real north of La Bajada pass through short- grass rolling hills with patches of piñon and juniper trees. Based on observations of current age classes for the trees, the trees appear to be increasing in density. The grasses are dominated by species that are typical of the short- grass region, such as blue grama, galleta, Indian ricegrass, and hairy grama. Shrubs include four- wing saltbush, cholla, and rabbitbrush.

The upland portions of the national historic trail south of La Bajada pass through a semi- desert grassland, which covers about 26 million acres in Arizona, New Mexico, Texas, and northern Mexico. The region contains a complex of vegetation types ranging from nearly pure stands of grasses, through savanna types with grass interspersed by shrubs or trees, to nearly pure stands of shrubs. On the Jornada plain, the major grass species on sandy soils are black grama, mesa dropseed, and red threeawn. Shrubs or shrub-like plants on sandy soils include honey mesquite, four- wing saltbush, soaptree yucca, and broom snakeweed. Extensive dunes have developed where mesquite has invades sandy soils. Low- lying areas with heavier soils, which receive water from surface runoff, are dominated by tobosa and burrograss. Tarbush is a frequent invader of these heavy soils. Slopes with gravelly soils near the mountains are typically dominated by creosote- bush. In years with favorable winter and spring moisture, many annual grasses and forbs are also abundant across soil types.

Within the mountains, shrub types are mixed. Major dominants include honey mesquite, creosote- bush, sotol, ocotillo, and whitethorn. Some areas of scrub woodland are dominated by red- berry juniper and piñon pine.

The increase in brush on the Jornada plain is well documented. A land survey made in 1858 included notes on soils and vegetation. From these notes, the relative abundance of brush types in 1858 was reconstructed. Extent of brush types was also determined from vegetative surveys make on the Jornada plain in 1915, 1928, and 1963 (see http://jornada-www.nmsu.edu)

Mesquite is the primary invader on sandy soils. Tarbush has increased on the heavier soils, and creosote- bush occupies shallow and gravelly soils. Collectively, the spread of brush has been ubiquitous and rapid. As a result, livestock grazing capacities have been lowered. Periodic droughts, past unmanaged livestock grazing, and brush seed dispersal by humans, livestock, and rodents, have all contributed to the spread of the shrubs. Brush has increased in permanent livestock enclosures erected during the 1930s, demonstrating that brush invades grasslands even in the absence of livestock grazing. Once established, brush effectively monopolizes soil moisture and nutrients, and grass reestablish-

ment is generally very limited, without selective control of brush species.

Visitor Experience/Information and Education

New Mexico and west Texas have long been destinations for visitors. The region has attracted people drawn to a rich history, blending of cultures, and awe- inspiring scenery. Today, however, opportunities for visitors to learn about and travel along El Camino Real are limited. Local residents who know of the existence of El Camino Real have more opportunities to participate in related activities and celebrations than do visitors from other parts of the country or the world.

Existing El Camino Real activities are limited to driving a designated byway, participating in a few local celebrations, touring a historic site, or visiting an interpretive facility/museum. Related orientation/information and interpretation/education are limited to the Internet and a few museums/interpretive facilities at a few historic sites. Regional recognition of El Camino Real has occurred, and continues to occur, through place names, public art, and other programs. The legacy of El Camino Real is also reflected in road architecture and place names.

Orientation/Information: Orientation to and information about El Camino Real are available in a variety of formats for local residents and out- of- state visitors:

- Chambers of commerce and tourism organizations in communities along El Camino Real provide informational and orientation brochures. Examples include El Camino Real—***A National Scenic & Historic Byway***, by the New Mexico Department of Tourism; ***El Camino Real—The Royal Road***, by El Camino Real Economic Alliance; and ***The Official Visitors Guide of Las Cruces, New Mexico, 2001- 2002***, by the Las Cruces Convention and Visitor Bureau.
- The New Mexico Department of Tourism hosts an Internet website with general information about El Camino Real. The site has a map and brief narrative history, and lists the trail as a "scenic attraction" for a day trip (see www.newmexico.org/ScenicAttractions/camino.html).
- Camino Real Administration contracted with the Public Lands Interpretive Association to produce a website on the Internet about El Camino Real de Tierra Adentro National Historic Trail. The site contains historic maps, interpretive text, and will be expanded in the future with additional features (see www.elcaminoreal.org).
- The BLM has an agreement in place with the University of Texas at El Paso to develop an Internet website about the historic El Camino Real and the national historic trail . This site is expected to be on the World Wide Web in the fall of 2002.

Interpretation/Education: There are a few interpretive and educational materials available, if local residents and out- of state visitors ask and search for them.

- El Camino Real Project, Inc., a private, non- profit corporation, developed an exhibit, "El Camino Real: Un Sendero Histórico," which was displayed throughout the state in 1990- 1991. The exhibit is still available for showing at institutions or facilities for a fee. A companion booklet entitled "El Camino Real" was developed for the exhibit.
- The Museum of New Mexico developed a traveling exhibit on El Camino Real, which began touring in 2002. The exhibit consists of a three- dimensional *carreta* filled with bundles of supplies and goods.
- The BLM and New Mexico State Monuments produced audiotapes and

compact discs for use by travelers as they drive along El Camino Real. The tapes were made available in summer 2002.

- The San Elizario Genealogy and Historical Society of San Elizario, Texas, developed a self- guided walking tour of the San Elizario Historic District. An accompanying booklet interprets historic sites and the route of El Camino Real through the community.

- The BLM worked with Statistical Research, an archeology/environmental education firm in Arizona, to develop educational materials about El Camino Real. Curriculum materials are written for middle school students. The materials will be available in fall 2002 on the Internet.

- Since 1995, professionals of various disciplines from Mexico and the United States have collaborated and undertaken projects focusing on the central theme of El Camino Real de Tierra Adentro. Both the NPS and BLM have cooperative agreements in place with the Instituto Nacional de Antropolgia e Historia (National Institute of Anthropology and History or INAH) in Mexico, and participate in a research, conservation, and dissemination program concerned with the cultural values associated with El Camino Real. "Dissemination" projects have included book fairs, artifact and photography exhibitions, and two volumes of recorded music (on CD- ROM) of "Músicos del Camino Real de Tierra Adentro."

- Another aspect of the joint international effort to disseminate research about El Camino Real involves a series of colloquia held each year since 1995. Supported by the NPS, BLM, INAH, and Ciudad Juárez Universidad, the colloquia occur in different cities along El Camino Real in Mexico and the United States. Mexican and American researchers present papers on topics related to El Camino Real. Research results from several coloquia are available in print, or on CD- ROM (see www.nmsu.edu/~nps/ and www.unm.edu/~camino/, with text in Spanish).

- Additionally, the BLM has published two volumes of research on El Camino Real as part of on- going cultural resource documentation (Palmer, et al., 1993; Palmer, et al., 1999).

- The Museum of New Mexico has posted a lesson plan and activities about El Camino Real on its website. The lesson asks the question "What was El Camino Real, and how did it impact how people lived in Nuevo Mexico?" and addresses New Mexico history, United States history, and multi- cultural studies. The lesson is most relevant for students in grades four and seven who are studying these areas. Students learn about life in Spanish colonial New Mexico through research, visual arts, and role- playing activities. A bibliography and other on- line resources are provided (see www.museumeducation.org/curricula_activity_camino.html).

- Other Camino Real lessons can be found on the Internet at a site developed by the Regional Educational Technology Assistance (RETA) program. RETA serves the professional development needs of New Mexico's K- 12 teachers, and brings technology curriculum integration to school sites around the state. El Camino Real lessons and projects are for students in grades 6 through 10, and address travel on El Camino Real, artistic traditions and culture, natural environment, agriculture, a timeline, and actions to preserve cultures and environmental along El Camino Real. Teacher guides will be forthcoming. This extensive project was a collaboration among the Museum of New Mexico; KNME public television; Department of Agricultural Communications of New Mexico State University; Camino Real Project, Inc.; New Mexico Farm and Ranch Heritage

Museum; Río Grande Historical Collections; NPS; INAH; and the New Mexico State Department of Education (see reta.nmsu.edu:16080/camino/main.html).

Interpretive and educational programs and media are also offered at the representative historic sites, parks, and cultural facilities as described below.

Historic Sites/Parks/Cultural Facilities
(from south to north)

El Paso Missions and Mission Trail, El Paso, Texas - The road from Ysleta to San Elizario is the designated Mission Trail driving route connecting the communities of San Elizario, Socorro, and Ysleta. This route represents the historic connection of Socorro and Ysleta Missions with the San Elizario Presidio on El Camino Real.

San Elizario Presidio Chapel and Plaza: San Elizario was established as a presidio in 1789 to protect settlements in the lower Río Grande Valley downstream from El Paso, Texas. The chapel was originally built in 1853 as part of the fort compound. The village plaza, jail, and other historic adobe structures that reflect Spanish colonial settlement enhance the present chapel, built in 1877. A self- guided walking tour is available, with an accompanying booklet.

Socorro Mission and Ysleta del Sur Mission: The missions were established in the 1680s as a result of the Pueblo Revolt. Franciscan monks established Mission Socorro and Mission Ysleta to provide refuge for Piro and Tigua Indians and Spanish settlers who had retreated from the north. Because of changes in the Río Grande channel, flooding, and fire, the missions have been relocated and reconstructed several times.

Chamizal National Memorial, El Paso, Texas - Administered by the NPS, the memorial commemorates the peaceful settlement of a century- old boundary dispute between the United States and Mexico. The Chamizal Treaty was a milestone in diplomatic relations between Mexico and the United States in 1963. Cultural activities at the memorial are dedicated to furthering the spirit of understanding and goodwill between two nations that share one border.

New Mexico Farm and Ranch Heritage Museum, Las Cruces, New Mexico - The New Mexico Farm and Ranch Heritage Museum features exhibit galleries and livestock to highlight the history of farming and ranching in New Mexico. The main gallery displays tools used years ago to cultivate New Mexico's farmlands. A permanent exhibit uses the biographies of 33 New Mexicans to tell the story of 3,000 years of agricultural history in the state. There is an extensive display of barbed wire. Temporary exhibits are also displayed. Milking demonstrations are held twice daily at the dairy barn. Visitors can also see longhorn cattle, churro sheep, goats, and Jerusalem donkeys. A wildflower garden, apple orchard, and crops are on the site.

La Mesilla, New Mexico - La Mesilla includes a historic plaza and surrounding buildings that have been restored to their 19th- century appearance. During the 1800s, the area was a camping and foraging spot for both Spaniards and Mexicans. The first permanent settlers came to La Mesilla after the Treaty of Guadalupe Hidalgo in 1848. By 1850, there was an established colony; later, La Mesilla became a main supply center for garrisoned troops. The Mexican- American War and the Treaty of Guadalupe Hidalgo left La Mesilla in a "no man's land"—a strip of land claimed by both the United States and Mexico. The Gadsden Purchase in 1854 established that La Mesilla was officially part of the United States.

People can see 19th- century businesses on the plaza, and 19th- century residences within a four- block area of the plaza. The town is surrounded by farmland and ditches used since 1850. Visitors can walk around the plaza, see a historic church, and visit the privately owned Gadsden Museum.

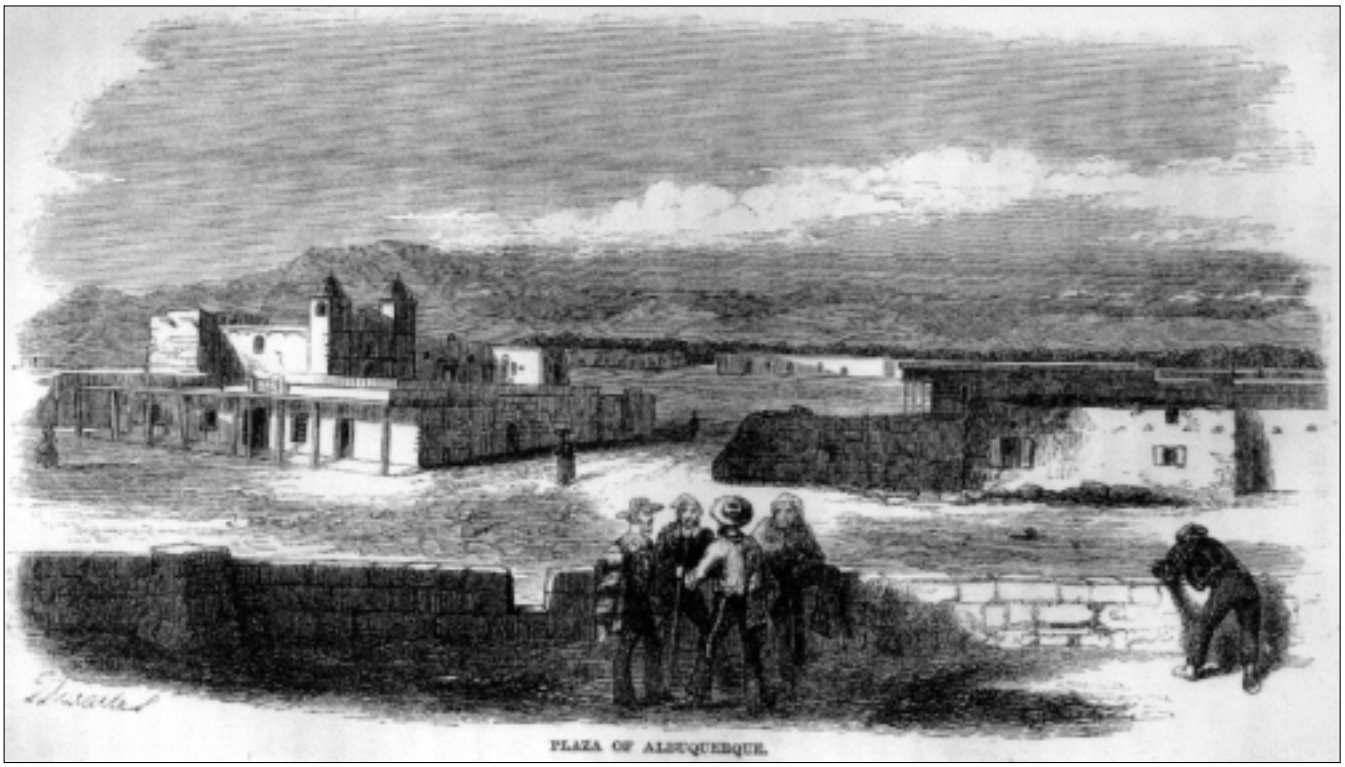
Fort Selden State Monument, Radium Springs, New Mexico - Fort Selden was built near the town of Las Cruces in 1865, and housed troops for 25 years. The fort housed one company of infantry and cavalry, including units of black troops known as "Buffalo Soldiers." By 1890, Apache raiding parties and outlaws were not considered threats; in 1891, the federal government decommissioned Fort Selden.
A visitor center at the monument offers exhibits on frontier military life during the fort's heyday. Living history demonstrations of 19th-century military life highlight most weekends during the summer. Self-guided walking tours through the adobe ruins are available.

Geronimo Springs Museum, Truth or Consequences, New Mexico - The Geronimo Springs Museum features displays of North American Indian artifacts; prehistoric Mimbres pottery; ranching and mining items; paleontological and geological finds; a reconstructed log cabin; Southwest art; and mementos of Ralph Edwards, originator of the "Truth or Consequences" radio show. A Geronimo Days celebration, featuring Apache dancers, music, storytelling, crafts, and wine tasting, is held Columbus Day weekend.

Fort Craig Historic Site, Socorro County, New Mexico - Managed by the BLM as a special management area within the Socorro Resource Area, Fort Craig lies at the northern end of Jornada del Muerto. Established in 1854, the fort was built to establish a military presence in the region, to control Apache and Navajo raiding, and to protect settlers and travelers along El Camino Real. In 1862, troops from the fort participated in the Civil War Battle of Valverde. The adobe fort has been reduced to low mounds through erosion and vandalism. Visitors to the site can take self-guided walking tours of the ruins.

Tomé Plaza and Tomé Hill, Tomé, New Mexico - Tomé was settled as early as 1650, but it was abandoned after the Pueblo Revolt of 1680 and remained uninhabited until the Tomé land grant was established in 1739. Historic Tomé Plaza includes the Immaculate Conception Church and a museum, a jail, and several other adobe structures.

The prominent Tomé Hill was a significant landmark for travelers along El Camino Real. Tomé Hill Park is open to the public and has hiking trails, interpretive signs, and a brochure. A piece



Plaza of Albuquerque, 1852.

of sculpture at the hill, "La Puerta del Sol," commemorates El Camino Real.

Indian Pueblo Cultural Center, Albuquerque, New Mexico - The Indian Pueblo Cultural Center is owned and operated by the 19 Indian pueblos of New Mexico. The center provides a historical and contemporary look at the Southwest's first inhabitants. Facilities include museum displays, cafe, gift shops, smoke shop, and the Institute for Pueblo Indian Studies.

National Hispanic Cultural Center, Albuquerque, New Mexico - The center offers displays highlighting historic and contemporary Hispanic arts, humanities, and achievements from the past 400 years. Visitors can enjoy art exhibits, dance, music, and theater. Facilities include a genealogy center, gift shop, and restaurant.

Petroglyph National Monument, Albuquerque, New Mexico - Administered by the NPS, the monument protects hundreds of archeological sites and an estimated 25,000 rock images carved and painted by native peoples and early Spanish settlers. These images, and associated archeological sites in the Albuquerque area, provide glimpses into a 12,000- year- long story of human life in this area. The monument stretches 17 miles along Albuquerque's West Mesa, a volcanic basalt escarpment that dominates the city's western horizon.

Coronado State Monument, Bernalillo, New Mexico - In 1540, Francisco Vásquez de Coronado arrived in the Río Grande Valley with armed soldiers, Indian allies from New Spain, and a moveable food source of pigs, chickens, and cattle. Searching for fabled cities of gold, the expedition found thriving agricultural villages inhabited by Pueblo peoples. One of Coronado's campsites was near the Tiwa pueblo of *Kuaua* (evergreen).

Prominent Southwest architect John Gaw Meem designed the visitor center, which contains exhibits on the prehistory and history of the Río Grande Valley. Murals on display in the visitor center were some of those removed from a *kiva* (ceremonial chamber) at the site, and are among the finest examples of mural art in North America dating from pre- European contact. The *kiva* has been rebuilt and is open to visitors, with reproductions of the original murals adorning its walls.

El Rancho de las Golondrinas, La Cienega, New Mexico - Las Golondrinas was a historic *paraje* (stopping place) along El Camino Real. *El Rancho de las Golondrinas* (ranch of the swallows) is a historic *rancho* dating from the early 1700s, which is now being used as a living history museum. Historic buildings at the *rancho* have been restored, imported, or reconstructed, and archeological sites are on the grounds. Costumed interpreters present programs about life in early New Mexico. Special festivals and theme weekends offer visitors an in- depth look at celebrations, music, dance, and other aspects of life. Educational materials, games, and other publications are available.

Palace of the Governors, Santa Fe, New Mexico - The Palace of the Governors is the oldest continuously used public building in the United States. The building now serves as the History Museum of the Museum of New Mexico. The artifact collection consists of over 15,000 catalogued objects, and focuses on the history and culture of New Mexico and the Southwest spanning 300 years. El Camino Real artifacts are included in the collection. Visitors can tour the museum and see permanent and changing exhibits. Educational programs are provided for school groups.

Oñate Monument and Visitor Center, Alcalde, New Mexico - This facility offers a variety of services for the local community, including Internet access, current weather conditions, *acequia* and land grant information, and a GIS center with mapping capabilities. Temporary, revolving displays and interpretive materials are offered on the history of northern New Mexico, the Oñate Expedition, and El Camino Real. Exhibitions of art are also displayed. Facilities include a kitchen, restrooms, and a gift shop with local materials.

U.S.-Mexico Boundary Marker #1, Sunland Park, New Mexcico

Scenic Byway/Millennium Legacy Trail/Highway Markers

The historic El Camino Real corridor has both state scenic and historic byway and national scenic byway designations. The national designation, conferred on June 9, 1998, by the U.S. Department of Transportation, Federal Highway Administration, denotes that El Camino Real National Scenic Byway has scenic, natural, historic, and cultural qualities.

Visitors wishing to follow the scenic byway can obtain a map, route descriptions, and other information from the National Scenic Byways Program website at www.byways.org on the Internet. Road signs identifying the byway through New Mexico are in place along the byway route.

The New Mexico Department of Tourism released a CD-ROM on El Camino Real in 2001. Entitled "Centuries Along Scenic Byways," the disc contains general information about El Camino Real, Santa Fe, and Route 66 scenic byways (See www.newmexico.org).

In 2000, a partnership between the White House Millennium Council, U.S. Department of Transportation, and Rails-to-Trails Conservancy and other agencies and organizations sponsored the Millennium Trails program. Governors of the states and territories nominated trails for this program, and El Camino Real de Tierra Adentro was chosen and designated a Millennium Legacy Trail. The designation brought national recognition to the trail. Even though there are signs or markers denoting the trail in place along the corridor, a commemorative plaque denoting the designation will be displayed in the proposed El Camino Real International Heritage Center.

El Camino Real Project, Inc., a private, non-profit corporation, worked with the New Mexico State Highway and Transportation Department to develop and install 33 historical highway markers in New Mexico and 13 in Chihuahua, Mexico.

Public Art and Activities

Both the cities of Santa Fe and Albuquerque have public art plans. In 2002, the Santa Fe Arts Commission chose a winning public art entry commemorating El Camino Real. Two interrelated artworks will be installed at Frenchy's Field on Agua Fria Street and at De Vargas Park on Guadalupe Street. The works address the significance of El Camino Real in Santa Fe's development, and the importance of exchanges between Santa Fe and Mexico City. The Albuquerque art plan is entitled "El Camino Real: the Road of Life."

The New Mexico Arts, a division of the Office of Cultural Affairs, has begun projects to present public art demonstrations funded through the Intermodal Surface Transportation and Enhancement Act (ISTEA). Pilot projects are in Las Cruces and Belen. An enhancement grant provided the first El Camino Real public artwork, "La Puerta del Sol," at Tomé Hill.

In 2002, Magnífico, a private, non-profit organization, and New Mexico Arts sponsored an art project, "El Camino Real Billboard Art." Artists were solicited to submit artwork commemorating El Camino Real Millennium Legacy Trail, which was displayed on billboards in Albuquerque and along Interstate 25.

Names given to present- day roadside architecture, even if not on the actual El Camino Real, reflect the trail's enduring presence on the landscape. For example, visitors can dine at El Camino Dining Room and stay at El Camino Motor Hotel in Albuquerque. In Socorro, they can visit El Camino Restaurant and Lounge; and in Las Cruces, they can visit El Camino Real Restaurante.

Although roadside architecture may seem a whimsical way to remember El Camino Real, permanent place names relate directly to the trail. As visitors drive along Interstate 25 and navigate with area maps, they will see evidence of the trail in names such as El Paso del Norte, La Cruz de Robledo, Fray Cristóbal, Socorro, Ojo del Perrillo, and Jornada del Muerto.

Another avenue for present- day commemoration of the trail is the holding of events and festivals that are related contextually to El Camino Real in New Mexico and Texas communities. Representative events and festivals include:

- "Frontier Days"–Fort Selden, New Mexico
- "Juan de Oñate First Thanksgiving Festival–El Paso, Texas
- "Juan de Oñate Reenactment–Truth or Consequences, New Mexico
- "Indian Market"–Santa Fe, New Mexico
- "Spanish Market"–Santa Fe, New Mexico
- "Spring Festival," "Summer Festival & Frontier Market, " and "Harvest Festival"–El Rancho de las Golondrinas, Santa Fe, New Mexico

Water/Air Quality

The goals of this program are to protect, maintain, and enhance, wherever possible, the water and air resources of El Camino Real de Tierra Adentro Management Plan Area for the benefit of humans, and the wide variety of plant and animal ecosystems. Reduction of non- point-source pollution through control of soil erosion and sediment production from public lands remains a high priority management goal. Best management practices will be applied to reduce the impacts of surface- disturbing activities.

Prevention and reduction of impacts to air quality from activities on public lands is accomplished by mitigation measures developed on a case- by- case basis through the environmental analysis process.

Throughout the planning area, the BLM and NPS will coordinate riparian/wetland habitat management with other programs and activities, including watershed, rangeland resources, wildlife, recreation, and lands. Riparian habitat values will be addressed for all surface and vegetation- disturbing actions.

Location and construction of trail tread- ways will take into consideration—and avoid, if possible—conflicts with private waters, private lands, sensitive wildlife and plant habitats, and sensitive cultural resource sites. As individual trails are sited for development and where further National Environmental Policy Act (NEPA) compliance is necessary, all required site- specific studies and clearances will be done and determination will be made concerning the environmental consequences of the proposal.

Wildlife/Fishery

BLM's wildlife program is directed to the management of habitat for all forms of aquatic and terrestrial wildlife on public lands, including habitat for special status animals and plants. The BLM works closely with the New Mexico Department of Game & Fish, which is responsible for the management of resident wildlife.

The objectives of BLM's wildlife program are to improve and protect aquatic and terrestrial wildlife habitat by coordinating the management of other resources and uses on public land. This coordination is designed to maintain habitat diversity, sustain ecosystem integrity, enhance esthetic values, preserve the natural environ-

ment, and provide old- growth habitat for wildlife. These two objectives are accomplished to some extent through habitat manipulation, and to a great extent through mitigation under the National Environmental Policy Act.

In the lower elevations along the trail (near 4,000 feet), pronghorn antelope and mule deer are the most widely distributed large game animals, but they are rare along the corridor. The common white- tailed deer is present in Texas. Scaled quail and Gambel's quail are present in most of the area. Black- tailed jackrabbit, desert cottontail, kangaroo rat, wood rat, and numerous smaller rodents compete with domestic and wild herbivores for available forage and are preyed upon by coyote, bobcat, mountain lion, golden eagle, great horned owl, red- tailed hawk, and ferruginous hawk.

The major mammals in New Mexico Plateau ecoregion (5,000 to 7,000 feet in elevation) include mule deer, mountain lion, coyote, and bobcat. Elk are locally important. Pronghorn antelope are the primary large mammal in the semi- arid desert grasslands. Smaller species include wood rat, white- footed mouse, cliff chipmunk, jackrabbit, cottontail, rock squirrel, porcupine, and gray fox. The ring- tailed cat and spotted skunk occur rarely.

The most abundant birds are plain titmouse, scrub jay, red- tailed hawk, golden eagle, red-shafted flicker, piñon jay, and rock wren. Summer residents include chipping sparrow, night hawk, black- throated gray warbler, Northern cliff swallow, lark sparrow, and mourning dove. Common winter residents are pink- sided junco, dark- eyed junco, white-breasted nuthatch, mountain bluebird, robin, and Steller's jay. Turkey is locally abundant during the winter. Reptiles in this ecoregion include the horned lizard, collared lizard, and rattlesnake.

RESOURCE USES

Energy/Minerals

The area has not been extensively drilled for oil and gas deposits. Of the 51 exploratory oil and gas wells drilled within the corridor, 10 had shows of oil and/or gas. There are no producing wells within the corridor, which has mostly a low potential for the discovery of economic oil and gas deposits. However, an area along the western part of the corridor from south of Santa Fe to the Valencia- Socorro County line includes geologic structures and stratigraphy that indicate a moderate potential for oil and gas discoveries.

Faulting and deep magmatic activity associated with the Río Grand rift along the southern half of the corridor has heated subsurface water to above normal levels, resulting in the formation of hot springs around Truth or Consequences, Socorro, and Radium Springs. The corridor from the Caballo Reservoir south to the Mexico border has a high to moderate potential for the discovery of economic geothermal resources; the remainder of the corridor has a moderate to low potential. Twenty- five geothermal (25) wells have been drilled within the corridor between Radium Springs and Las Cruces. These wells include temperature gradient holes, observation wells, and exploratory wells. Three wells Southwest of Tortugas Mountain produce low-temperature geothermal waters (less than 190(F) for greenhouses operated by New Mexico State University. To date, no high- temperature resources capable of generating electricity have been identified within the corridor.

The corridor includes portions of several small, economically insignificant coal fields. They are the Engle Field, northeast of the Caballo Mountains; the Carthage Field, southeast of Socorro; an unnamed field, east of San Acacia (north of Socorro); and the Tijeras, Hagen, and Cerrillos Fields, between Albuquerque and Santa Fe.

Potential economic deposits of sand and gravel, cinder, scoria, and stone occur throughout the corridor. Mining of a particular deposit depends

Table 8: Areas with Moderate Potential for Discovery/Development	
Area	**Commodity**
Tortugas Mountain, east of Las Cruces	Fluorspar
Tonuco Mountain, north of Radium Springs	Fluorspar
Red Hill, southwest of Socorro	Manganese
Socorro Peak, west of Socorro	Silver, Lead
Ortiz Mountains, Santa Fe County	Gold, Silver
Cerrillo Hills, Santa Fe County	Gold, Silver, Lead, Copper, Zinc, Turquoise
Santa Fe River Canyon near La Bajada	Uranium

upon its proximity to a viable market, usually an urban area or a highway construction project. Forty- eight (48) deposits are presently being mined and processed along the corridor, mostly between El Paso and Las Cruces, and between Belen and Santa Fe.

Other active mineral operations include gypsum mines east of Anthony (north of El Paso) and near Rosario (south of La Bajada); a perlite mine and mill south of Socorro; and a pumice mine west of Española. In addition, there are eight active plants processing various mineral commodities trucked in from mines outside of the corridor. Seven are between Albuquerque and Española, and one is near Belen.

There is no active mining of hardrock (metallic) and related minerals within the corridor. Several areas, listed below, have been mined or prospected in the past, and are considered to have a moderate potential for future discoveries or development. The potential for future discoveries of hardrock and related minerals outside these areas is considered low.

Legal Disposition of Mineral Resources

The entire spectrum of mineral estate ownership is included within El Camino Real corridor; that is, federal, state, Indian, and private. Privately owned minerals may be leased by the private mineral owner at his or her discretion. State-owned minerals may be leased at the discretion of the state. Indian- owned minerals are leased by the U. S. Bureau of Indian Affairs with the consent of the Indian mineral owner and/or Pueblo government. Federal minerals, because they are a publicly owned resource, are generally available for development, unless specifically prohibited by federal law or other legal authority.

The Bureau of Land Management is responsible for administering all federal minerals, including federal minerals where the surface is managed by another federal agency or is in non- federal ownership. The authorities under which federal minerals are disposed of include the Mineral Leasing Act of 1920 (oil/gas and coal); the Materials Act of 1947 (sand and gravel, cinders, scoria, stone, and other mineral materials); the Acquired Lands Leasing Act of 1947 (acquired minerals); the Geothermal Steam Act of 1970 (geothermal); and the Mining Law of 1872 (metallic or hardrock minerals and certain non-metallic minerals).

Federal leases are issued by the BLM after consultation with the surface management agency subject to any constraints imposed by the agency. Mineral materials are sold at the discretion of the surface management agency, subject to any management constraints. Government agencies and municipalities may obtain free use of mineral materials from BLM land. Generally, federal land that is managed for multiple use (most BLM and USDA Forest Service land) is open to entry (prospecting and mining claim location) under the Mining Law. Land managed for a specific use or project is usually withdrawn from entry under the Mining Law, but may or may not be open to leasing. If open, leasing is allowed if the specific use or project is protect-

ed. Spanish Land Grants, several of which are included within the corridor, include a royalty reservation for certain metallic minerals (gold, silver and quicksilver) to the U.S. Because the surface owner can only develop such minerals, they are, for all practical purposes, private minerals. All minerals on Federal acquired land are leasable, subject to the consent of the acquired land agency. Surface disturbance caused by any Federal mineral development is usually regulated by the surface management agency. Where the agency has no applicable regulations or the surface is in non- Federal ownership, the BLM regulates the activity. The BLM "Surface Management under the Mining Law" regulations are contained in 43 CFR 3809. In addition, hardrock mining activity on all land, except Indian, is regulated by the State under the New Mexico Mining Act.

Table 9: Federal Mineral Estate

Land Unit	Surface Agency	Legal Status under the Mining Law
BLM	BLM	Open
National Forest	USFS	Open
Sandia Mountain Wilderness	USFS	Closed
Sevilleta NWR	USFWS	Closed
Bosque del Apache NWR	USFWS	Closed
Little San Pascual Wilderness	USFWS	Closed
Chupadera Wilderness	USFWS	Closed
Jornada Experimental Range	USDA	Open to "Metalliferous minerals"
Animal Science Ranch	NMSU	Closed
U.S. Bureau of Reclamation	USBOR	"First form" withdrawals Closed "Second form" withdrawals Open
Tortugas Mountain	NASA	Closed
U.S. Army Corps of Engineers	COE	Closed
International Boundary and Water Commission	IBWC	Closed

Table 10: Federal Mineral Resource Activities (by county)		
Activity	**Number**	**Acres**
Doña Ana and Sierra Counties		
Mining Claims	66	1,320
Mining Notices and Plans	4	16
Mineral Material Areas	15	543
Oil and Gas Wells (dry and abandoned)	4	-
Geothermal Leases	3	2,080
Geothermal Wells	4	-
Total Acres		**3,959**
Socorro County		
Mining Claims	2	40
Mineral Material Areas	12	270
Oil and Gas Wells (dry and abandoned)	4	-
Oil and Gas Leases	3	258
Total Acres		**568**
Río Arriba, Santa fe and Sandova Counties		
Mining Claims	84	1,680
Mining Notices and Plans	2	14
Mineral Material Areas	14	2,470
Oil and Gas Leases	2	3,072
Oil and Gas Wells (dry and abandoned)	2	-
Total Acres		**7,236**

The following is the status of federal mineral estate under the Mining Law within the corridor. All land units, except designated wilderness, are open to leasing under the Mineral Leasing Act and for mineral material sales; however, leasing and sales are at the discretion of the surface management agency.
Federal Mineral Resource Activities within El Camino Real Corridor are listed below.

Livestock-grazing

Privately owned livestock graze on the BLM managed public lands. The livestock graze under the 43 Code of Federal Regulations 4100. Consistent with the direction of the Taylor Grazing Act of 1934, the preference to graze livestock is attached to base waters owned or controlled by ranchers. The base waters provide water to the livestock when they graze on the public land. Livestock grazing permits issued by BLM authorize a specific number and type of livestock. The season of use for grazing is also established in the permit.

Rangeland Improvements that are needed to manage and support the livestock operations are authorized through Section 4 permits and/or Cooperative Agreements for Range Improvements. Examples of range improvements include wells and pumps, fences, roads and corrals.

Ranches along the trail are typical for New Mexico. The ranches are composed of private, state, and public lands. The ranches generally are yearlong cow- calf operations. They are extensive operations that generally are not a highly developed with range improvements. Often, but

not always, the rancher or rancher manager lives on the ranch. The ranches are generally remote and provide a degree of isolation to the ranch families and their staff. On average, New Mexico ranches are accessed about 400 times per year by recreationists, hunters and hikers. (Jemison, 2000; Fowler, n.d.). Livestock Management in the American Southwest Ecology, Society, and Economics Edited by R. Jemison, C. Raish; Historic range livestock industry in New Mexico (Fowler, n.d.).

Lands/Realty

The portion of the trail from El Paso north through the Mesilla Valley and Las Cruces is one of the areas with the most public land within the trail boundary and the most heavily used area of the trail for rights- of- way; Recreation and Public Purposes (R&PP) leases and patents; and other land use activities, particularly in the Las Cruces/El Paso corridor. Because of the densely populated Mesilla Valley and the cities of Las Cruces and El Paso, numerous pipelines, electric lines, highways, fiber- optic lines, and roads crisscross the trail. Interstate 25 and the Burlington Northern/Santa Fe railroad line follow the direction of the historic trail. The fast-growing City of Las Cruces is putting increased demands upon the public lands in the Las Cruces area. New rights- of- way, requests for R&PP leases and patents, and the desire for more land in private ownership and for open space have fueled a frenzy of lands activity along the trail in this segment. The larger rights- of-way are confined to well- established corridors. These corridors run east and west from Las Cruces to Deming and Lordsburg, and north along I- 25. Overlapping rights- of- way are issued whenever possible. Interstate 25 and Interstate 10 provide corridors for major rights-of- way. The recent increase in fiber- optic and cellular industries has resulted in the filing of several rights- of- way for fiber- optic lines within this corridor.

Approximately 45 R&PP leases and patents have been issued to Doña Ana County, the City of Las Cruces, smaller communities in the area, and the local school boards. An existing memorandum of understanding with both the City of Las Cruces and Las Cruces School District No. 2 has resulted in the establishment of "set asides" for future public purposes and school sites.

Exchanges between the BLM and the New Mexico State Land Office (NMSLO) have resulted in the state acquisition of a large block of land on the east mesa of Las Cruces. This land will be developed in the future by the SLO. The state uses a master plan for development of their large land holdings.

Several large withdrawals are located in the Las Cruces area, and are either crossed by the trail or within five miles of the trail. These withdrawals include College Ranch, Jornada Experimental Range, and National Aeronautics and Space Administration (NASA). The NASA withdrawal contains 2,800 acres, including Tortugas Mountain and the surrounding area. This withdrawal was for the protection of a NASA communication site. The College Ranch is withdrawn for use by New Mexico State University. The Jornada Experimental Range is withdrawn to the United States Department of Agriculture for use as an experimental station. In the Truth of Consequence area, the withdrawal for the Caballo and Elephant Butte Dams and Reservoirs are also located within the trail viewshed. Because the jurisdiction of the land has been transferred to another agency, the BLM does not always have the final say on ongoing land uses. The large White Sands Missile Range withdrawal including the area for Fort Bliss is located approximately 10 miles east of the trail area. All land uses on this withdrawal are controlled and restricted by the military.

Immediately north of the College Ranch withdrawal, in the area where the trail leaves the Río Grande and starts its long journey across Jornada del Muerto, a site known as San Diego is located on public land. This site has the potential for an interpretive pull- off from I- 25. A county road leaves I- 25 at the Upham Exit and provides access along the railroad tracks to Engle across the Jornada del Muerto. This road in some areas parallels the trail route. This area includes the most visible remains of the trail. At two areas adjacent to the road and the railroad,

the actual trail is visible. Both of these sites, Ojo de Perillo/Point of Rocks, and the Yost Escarpment have planned interpretive pull- offs. The Yost Escarpment site is located south of State land and because of the actual visual location of the trail on State land immediately north of the Yost Escarpment planned pull- off, there may be an opportunity for an agreement with the State Land Office or an exchange could be completed between the State of New Mexico and the BLM to bring the trail location into Federal ownership. Major north/south rights-of- way cross the trail location within the Jornada del Muerto. These include an El Paso Electric Company 345 KV power line, a Tri-State Generation Association 115 KV power line, and a right- of- way for buried telephone cable and two ORS sites held by Qwest Corporation. The power line rights- of- way were issued in 1967 and 1941 respectively. The Qwest right- of-way was issued in 1985. Maintenance of these rights- of- way is ongoing. In the late 1990s, public and state lands in the Engle area were being look at as a possible location for a spaceport. At the present time, New Mexico has not been awarded any contracts for this use.

Public land within the trail corridor between the Jornada del Muerto and Albuquerque is located primarily in the Socorro area. Interstate 25 follows the route of the trail, for the most part, through this area. U.S. Highways 60 and 280 provide east/west transportation corridors through the area. New Mexico State Highway 1 parallels I- 25 from Truth or Consequences to Socorro and provides a close- up view of the area traversed by the trail. The Burlington Northern/Santa Fe Railroad traverses the area north to south. The trail crosses the Sevilleta and Bosque del Apache Wildlife Refuges. A major north/south power line follows I- 25 in this area. Several relay and cell towers are visible from I-25. These are located mostly on private land. The R&PP patent issued to the State of New Mexico for El Camino Real International Heritage Center is located north of T or C, east of I- 25.

The portion of the trail between Albuquerque and La Bajada Mesa crosses public land in an area know locally, as the Ball Ranch. This public land appears to be crossed by the southern trail extension around La Bajada Mesa. The Albuquerque Field Office has been working for the last three years with the Pueblos of San Felipe and Santo Domingo to transfer these public lands to the Pueblos through exchange. The San Felipe exchange was completed in December 2001 and the Santo Domingo was completed in May 2002. With the completion of these two exchanges are completed, the only remaining public land in this area will be within the Ball Ranch Area of Critical Environmental Concern (ACEC). A smaller amount of public land is located adjacent to the community of Placitas, just north of Albuquerque. Because of the growth of the Placitas area, this public land is in demand for school sites, sand and gravel operations, community uses, and is crossed by major pipelines and power lines. The Equilon Pipeline Company LLC's proposed renovation and extension of the New Mexico Products Pipeline Project connecting Odessa, Texas and Bloomfield, New Mexico affects the Placitas area of the trail. Equilon proposes to reverse the flow of the pipeline to transport refined petroleum products from Odessa to Bloomfield. Previously the pipeline had transported crude oil from the Four Corners area south to Jal, New Mexico. The existing Placitas Pressure Control Station is located south of the trail location within the five- mile corridor. Several scattered tracts of public land in the Galisteo Basin south of Santa Fe are also impacted by the trail. Interstate- 25 follows the route of the trail through this area. Interstate- 40, which intersects I- 25 at Albuquerque, provides the major east/west transportation corridor in this portion of the trail.

From La Bajada Mesa north, the trail corridor enters Santa Fe along the Santa Fe River through La Cienega and then north to Española and San Juan Pueblo. Much like the El Paso/Las Cruces portion of the trail, the Santa Fe/Española area has been subject to heavy growth in the last 10 years. The demand for services, including waste disposal sites, power lines, pipelines, recreation facilities, and other public purpose uses, has had an effect on the public land within this area. Most of the existing public land, with the exception of the large tract of public land adjacent to the Caja del Río in the area of La

Cienega and La Cieneguilla on the west side of Santa Fe has been exchanged for high resource value lands or has been leased or sold to the City and County of Santa Fe under the R&PP Act for various uses. Four major rights- of- way cross the public land in the La Cieneguilla area. One is a major 345 KV Public Service of New Mexico (PNM) power line providing power to the Albuquerque area from northern New Mexico. A natural gas pipeline also crosses this land. Three Land and Water Conservation Fund (LWCF) acquisitions have occurred along the Santa Fe River Corridor in the La Cienega area. These LWCF acquisitions have added land to the corridor and ensured the protection of a portion of the trail. Recent completion of the Santo Domingo private exchange has added an additional 470 acres of land located adjacent to the La Cienega ACEC.

Between Santa Fe and Española, the major block of public land is located northwest of Santa Fe in the Buckman area. Because of the recent development of the Las Campanas subdivision, the public land is under increased pressure for use for rights- of- way and recreation. The City of Santa Fe has well sites in the area near the Río Grande and two pipelines transport the water to Santa Fe. The well sites were authorized in the early 1970s. The Las Campanas subdivision, the City of Santa Fe, and Santa Fe County are currently working on rights- of- way that will take water from the Río Grande, at Buckman, and, after purification, transport this water to the subdivision and Santa Fe. The water pipeline rights- of- way would follow Buckman Road or existing rights- of- way, which may be the original route of the Trail through this area. Seven major rights- of- way, issued beginning in the early 1970s, follow the right- of- way corridor from Buckman to Santa Fe. The PNM right- of- way mentioned above also crosses this area. The public lands in the Buckman area have been recommended by the public for inclusion in an ACEC.

Recreation Use

There are many recreational uses occurring along the length of El Camino Real on public land, either federal or state. Some of this use can be tied directly to the trail, such as visitation related to historic sites or museums, while other uses occur without visitors knowing or learning about the trail. A brief description of representative recreational uses and locations follows:

National Forests

The USDA Forest Service manages public land adjacent to El Camino Real corridor.

Cibola National Forest, Sandia Ranger District - Just east of Albuquerque are the Sandia Mountains, the most visited mountains in New Mexico. Millions of people visit these mountains each year to ride the Sandia Peak Tram, drive the Sandia Crest National Scenic Byway, and to enjoy other recreational opportunities. The Four Seasons Visitor Center offers year- round interpretive exhibits and seasonal programs, while the scenic byway has picnic grounds with shelters.

The Sandia mountain range was a landmark on El Camino Real, and today the mountains provide premier open space to a population of over 700,000 people in the extended Albuquerque area. Recreation sites within this district offer hiking trails and picnicking. Downhill skiing is available at the Sandia Peak Ski Area, located on the east side of the mountains.

Santa Fe National Forest, Española Ranger District - Recreational facilities and opportunities in the Santa Fe National Forest are extensive, and include skiing, picnicking, hiking, fishing, camping, cross- country skiing, and wildlife viewing. El Camino Real corridor passes through a section of the Jemez Division of this national forest. Visitors can hike along the Santa Fe River Canyon, and up and down the La Bajada Mesa. Visitors can also drive and walk along Camino Real ruts on top of the mesa.

National Wildlife Refuges

The U.S. Fish & Wildlife Service manages two refuges within the trail corridor:

Bosque del Apache National Wildlife Refuge, Socorro County, New Mexico - Bosque del Apache National Wildlife Refuge is located at the northern edge of the Chihuahuan desert, and straddles the Río Grande approximately 20 miles south of Socorro. Tens of thousands of birds—including sandhill cranes, arctic geese, and many kinds of ducks—winter at the refuge. The heart of the refuge encompasses about 12,900 acres of moist bottomlands, providing habitat and protection for migratory birds and endangered species, as well as providing the visiting public with a high-quality wildlife and educational experience.

Bosque del Apache was inhabited for over 700 years by the Piro Indians, pueblo-dwellers who farmed, raised turkeys, gathered wild fruit, and hunted wildlife. Subsequent Spanish explorers and colonists on their way north from Mexico used El Camino Real as a vital trade avenue between Mexico and Santa Fe for almost 300 years. Remnants of El Camino Real roadbed and the Piro occupation are protected within the refuge.

Orientation is provided at the visitor center, with current information and wildlife sightings, displays, videos, and a bookstore. A 15-mile auto tour loop allows visitors to enjoy wildlife viewing and photography. The Seasonal Tour Road is open April through September, and is an excellent place to observe shorebirds and waders. During the winter, the area is reserved as a roost area for eagles and cranes. Refuge trails are easy hikes, with benches and observation points along the way. Hiking and nature observation also occur at the refuge's three wilderness areas. A picnic area is available. Primitive camping is available on a reservation basis to educational and volunteer groups only.

Sevilleta National Wildlife Refuge, Socorro County, New Mexico - Located in the Chihuahuan desert 20 miles north of Socorro, New Mexico, Sevilleta National Wildlife Refuge provides habitat for desert bighorn sheep, pronghorn, mule deer, mountain lion, and bear. Bird species include bald eagle, peregrine falcon, northern shoveler, northern pintail, American coot, wood duck, canvasback,

Sandhill Crane at Bosque del Apache, 1846.

redhead, great blue heron, black-crowned night heron, sandhill crane, killdeer, long-billed dowitcher, red- tailed hawk, kestrel, and burrowing owl. There is also a variety of insects, and also of reptiles, including the endangered horned lizard.

Sevilleta NWR is managed primarily as a research area, and is closed to most recreational

uses. However, limited hunting of waterfowl and dove is available, and special tours may be arranged. A visitor center, which opened in 2001, features changing wildlife exhibits. There is a hiking trail into the San Lorenzo Canyon. Open-house events occur yearly, with field trips to research sites, bird and plant identification field trips, and more.

Public Domain Lands

A wide range of recreational activities occurs on BLM-managed land within the corridor.

Las Cruces Field Office - Both developed and dispersed recreation opportunities are available in this area, located near Las Cruces. Principal users are from Las Cruces, Truth or Consequences and Alamagordo, New Mexico,

and El Paso, Texas. Dispersed recreation use in the resource area includes hunting, hiking, camping, picnicking, rockhounding, fishing, birdwatching, and vehicle recreation. Hunting is the most widespread use. Developed recreational sites are limited to the Organ Mountains Special Recreation Management Area and include the Aguirre Spring Recreation Area, La Cueva Picnic Area, and Dripping Springs Natural Area. Camping, picnicking, and hiking on developed trails take place in these areas. The Doña Ana Mountains Special Recreation Management Area was designated in the early 1990s, but no management for recreation is in place. There is only one developed recreation area, the Three Rivers Petroglyph and Picnic Area, but this area is outside the trail corridor.

Socorro Field Office - Residents of Albuquerque and Socorro and Catron counties are the primary users of recreational opportunities in the area administered by Socorro Field Office. The majority of recreation use is dispersed in nature, and includes, hunting, camping, picnicking, backpacking, horseback riding, climbing, caving, hang gliding, motorcycling, four wheel driving, observing nature, rockhounding and photography. The area has high elevation forested areas to the west, and low elevation semiarid regions to the east. There is only one developed campground, at Datil Well, which is outside the trail corridor. The field office contains several areas of local and national significance for recreation, including one within the trail corridor, Fort Craig Historic Site.

Albuquerque Field Office - This field office provides recreational opportunities for residents of Santa Fe and Albuquerque, the two largest metropolitan areas in New Mexico. Most of the recreation use is dispersed, and includes hunting, camping, picnicking, backpacking, horseback riding, climbing, caving, hang gliding, motorcycling, four wheel driving observing nature, rockhounding and photography. These activities take place in a low elevation semi- arid landscape in undeveloped areas.

Taos Field Office - Recreational opportunities near the trail corridor in the Santa Fe area include primarily dispersed activities, including hiking, horseback riding, picnicking and observing nature and cultural resources. There are no developed facilities in this area.

State Game Refuge

The state operates a game refuge within El Camino Real corridor, the Bernardo Waterfowl Wildlife Management Area. Hunting is allowed with the area, and visitors can follow a wildlife trail with watching and photographic towers. There are no other recreation sites in the area.

State Monuments

There are two state historical sites within El Camino Real corridor:

Fort Selden State Monument, Radium Springs, New Mexico - The historic fort was built in 1865 to protect Camino Real travelers. Visitors can visit a museum and walk on trails throughout the fort site.

Coronado State Monument, Bernalillo, New Mexico - The Tiwa pueblo of Kuaua once stood here on the banks of the Río Grande near the site where the expedition of Spanish conquistador Francisco Vásquez de Coronado camped in 1540. Visitors can visit a museum and walk on trails.

State Parks

The State of New Mexico provides facilities and resources for a range of recreational use. Three parks are within the trail corridor:

Leasburg Dam State Park, Radium Springs, New Mexico - Built in 1908, the Leasburg Dam is one of the oldest diversion dams in the state, channeling water from the Río Grande into the Mesilla Valley for irrigation. Recreation activities are an extra benefit, with camping, picnicking, fishing, and hiking occurring within the park. Fort Selden State Monument is nearby.

Elephant Butte State Park, Elephant Butte,

New Mexico - While not within the trail corridor, this reservoir, created by a dam built across the Río Grande in 1916, provides 200 miles of shoreline and is the largest and most visited lake in the state. Numerous park facilities support an array of activities including camping, picnicking, water- skiing, fishing, boating, sailing, trails, and wildlife viewing. A visitor center offers interpretive exhibits on the region.

Río Grande Nature Center State Park, Albuquerque, New Mexico - This state park is on the central Río Grande flyway and is a winter home for Canada geese, sandhill cranes, ducks, and other waterfowl. Facilities include a nature/visitor center and group shelter, and people can enjoy hiking on trails through a bosque, wildlife viewing and nature study.

The State of Texas manages two parks within El Camino Real corridor:

Magoffin Home State Historic Site, El Paso, Texas - Built in 1875 by Joseph Magoffin, this 19- room adobe home is a prime example of Southwest territorial style architecture. Three generations of the Magoffin Family lived in the house. Magoffin was an El Paso booster, active in a range of civic and political affairs, and served as mayor for four terms. His father, James Wiley Magoffin, was a trader on the Santa Fe and Chihuahua trails, and accompanied Stephen Watts Kearny from Missouri to Santa Fe in 1846. Visitors to the home enjoy docent- led tours; several annual events are held as well.

Franklin Mountains State Park, El Paso, Texas - Opened to the public in 1987, this urban park is the largest in the nation, covering some 37 square miles within the El Paso city limits. The Franklin Mountains overlook the Río Grande, and evidence of their North American Indian habitation can be seen in remaining pictographs and mortar pits in rock outcrops. People through time used a gap through the mountains, known as Paso del Norte, as a passageway both north and south. Activities at the park include camping, trail hiking, rock climbing, mountain biking and picnicking.

North American Indian Pueblos

Several North American Indian pueblos in New Mexico and Texas on El Camino Real provide facilities and resources for a range of recreational uses. These include:

Ysleta del Sur Pueblo, El Paso, Texas - The pueblo was established in 1681 after the Pueblo Revolt in New Mexico. The Tigua people own and operate a cultural center with a museum, gift shop, and café. Indian social dancing occurs at the center.

Pueblo of Isleta, Isleta Pueblo, New Mexico - The pueblo operates several business enterprises offering recreational opportunities, including the 45,000 square feet Isleta Gaming Palace, the championship Isleta Eagle Golf Course, and the Isleta Lakes Recreational Complex.

Pueblo of Sandia, Bernalillo, New Mexico - The pueblo owns and operates Sandia Casino, with 200,000 sq. ft. of gaming and food services. The Sandia Lakes Recreation Area is a tribally-run facility with stocked fishing, shaded picnicking, nature trail, playground, group shelters and a bait and tackle shop. Sandia Trails offers horseback rides among Río Grande cottonwood trees.

Pueblo of Santa Ana, Bernalillo, New Mexico - The pueblo offers a variety of recreational facilities, including the 27- hole Santa Ana Golf Course, 22 soccer fields with parking and concessions, a 7,000- person capacity stadium, and the Santa Ana Star Casino.

Pueblo of San Felipe, San Felipe Pueblo, New Mexico - San Felipe operates the Casino Hollywood, and opened a multi- use race track in 2002. The pueblo holds ceremonial dances and an annual arts and crafts show each October.

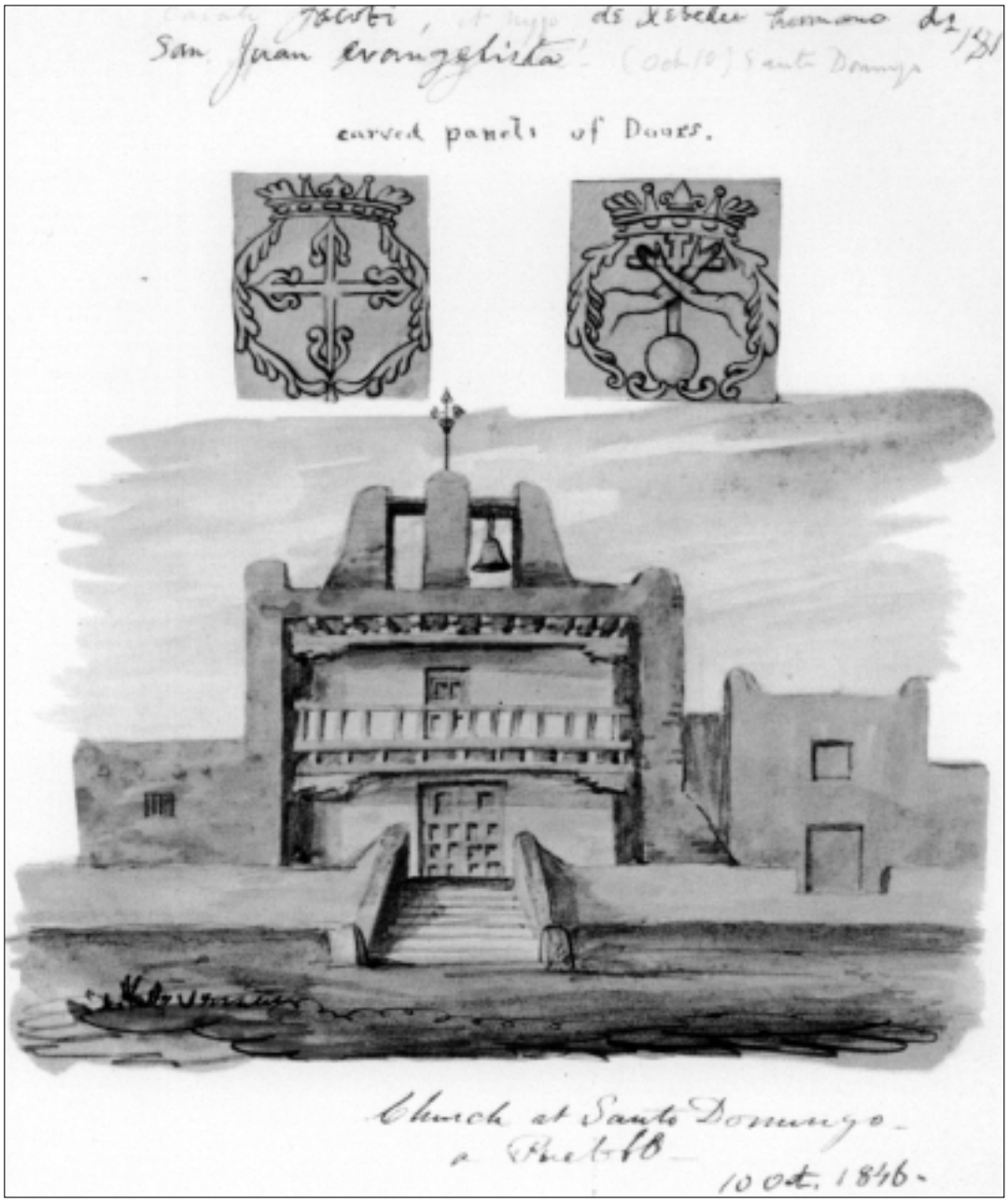
Pueblo of Santo Domingo, Santo Domingo Pueblo, New Mexico - The pueblo hosts an annual art and crafts show each Labor Day to showcase their craftsmanship and jewelry making.

Pueblo of Cochiti, Cochiti Pueblo, New Mexico - The pueblo operates the 18-hole championship Pueblo de Cochiti Golf Course, and the Cochiti Lake Marina and Recreational Center. The lake provides opportunities for numerous water-based recreational activities.

Pueblo of San Ildefonso, Santa Fe, New Mexico - The pueblo offers the San Ildefonso Fishing Lake for recreation, along with the San Ildefonso Pueblo Museum.

Pueblo of Santa Clara, Española, New Mexico - The pueblo provides recreation at its Santa Clara Recreational Area. Visitors can tour the Santa Clara Puye Cliff Dwellings, and enjoy the annual Christmas Bazaar for arts and crafts.

Pueblo of San Juan, San Juan Pueblo, New Mexico - The pueblo offers recreation at its San Juan Lakes, Bison Park, and RV park and travel center. Visitors can take guided tours of the First Capital Site, and enjoy gaming at the pueblo's Ohkay Casino and Best Western Casino and Resort.



Church at Santo Domingo Pueblo, 1846.